

Introduction
to the Study of
Economics

by
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PREFACE

THE object of this work is to introduce the student to the study of economics; to introduce him to the methods of analysis which are now most usually applied to the resolution of economic problems, and also to those opinions which economists as a body have formed about the relative importance of different aspects of the problem of maximising material wellbeing, and to the provisional conclusions which they have formed. The first is not very controversial, the second is more so; the third involves taking sides in many questions which are still open to debate. Even so, it is probably better occasionally to present a point of view which may be open to challenge than to leave the reader with a sense of divorce from the realities of the contemporary world.

I must acknowledge many obligations. The third chapter is based very largely upon work which my wife has been prevented by illness from completing. She is also responsible for most of the appendix. While I must not burden them with any share of the responsibility for a work of which they may find themselves critical, I feel, inasmuch as I here formulate my general opinions upon the science to which they introduced me, that I should seize this opportunity to express my gratitude to those economists who have in the past supervised my studies, Mr. R. F. Harrod, Professor D. H. Macgregor, and Mrs. Joan Robinson. Both by the written and the spoken word, Mr. A. P. Lerner, Dr. Lange, and, of course, in common with my generation, the late Lord Keynes, have influenced me greatly, and I wish the reflection were a more worthy one. Although this work is only an introduction to economics, I have embodied in it passages which set forth views which I hold upon certain somewhat controversial

issues. I am therefore deeply grateful to the Oxford University Press, to the Editors of the *Economic Journal*, and to the Editorial Board of the *Review of Economic Studies* for permission to include or paraphrase extracts from books and articles in which I have developed the views which are here expressed.

HENRY SMITH.

The Vice-Principal's Lodgings,
Ruskin College, Oxford. 1948.

I

THE SCOPE AND METHOD OF ECONOMICS

¶ ALL ECONOMISTS ARE not agreed upon the proper definition of the subject matter of their science, nor upon the methods most suitable to its pursuit. This is a good thing, as it shows that economics is a real science and is developing. The most formative and fruitful periods in the development of mathematics, physics and biology were periods of controversy; the ideas of Einstein not only revolutionised the methods of one science, but rendered the borderline between several others extremely fluid. This, after all, is what one would expect when once one has grasped what the scientist is after. Confronted with the infinite complexity of the physical universe and human society, the human mind can only hope to begin to understand it by looking at one aspect at a time, as systematically and objectively as possible. The two methods available are induction and deduction. Briefly, the former consists of building up a general law from particular instances; the latter of working out the logical results of something known to be true or assumed, as an hypothesis, to be extremely probable. In practice the two blend, because there are very few things, with the exception of certain mathematical propositions, of the truth of which we can in all circumstances be certain, and because the experimental scientist, following the inductive method, does not start looking at "facts" at random, but follows an hypothesis which he seeks to verify. But as between most of the physical and biological sciences on the one hand, dealing with the facts of the material universe and the processes of life, and sciences like economics which deal

with the life of man in society, there is a distinction. Where carefully controlled experiments can be made, as when a number of nearly identical guinea-pigs are treated exactly alike, except for their diet, in order to test theories about nutrition, or when chemically pure substances are extracted from the complex materials in which they are found in nature in order that their properties may be examined, the inductive method is predominant. The economist cannot do that sort of thing. It is inconceivable that the governments of two identical countries (there are no pairs of identical countries, anyhow), would allow economists to put the rate of interest up in one and down in the other, in order to find out if it had any effect on unemployment: in any case to use the inductive method properly thousands of similar experiments are needed. Thus the economist must fall back very largely on deduction, like the astronomer who (fortunately) is equally unable to arrange for the arrival of comets or the destruction of planets.

But this does not mean that the economist is less interested in "facts" than the physicist. The latter looks at the evidence presented by a large number of controlled experiments, decides that they indicate that a certain principle is very probably true, and goes on to see where else the principle can be applied. The economist starts with a theory about human behaviour in the economic field (which has yet to be defined), sees how closely it fits the facts, only some of which he knows and all of which are outside his control, and has then to decide if it is useful or not.

"Useful" is the right word, not "true". Let us return to the point that the scientist is looking at one aspect only of the complex whole of the world. "Truth" in the sense of complete understanding of the universe will probably never be achieved. Mathematical propositions like "twice

one are two" are true, but only in that they are internally consistent, because the definition of "two" is "twice one". Therefore we learn from them nothing new about the nature of the world. So "useful" is the test of any scientific proposition, in that it increases our power to predict, understand and control the processes of nature, including the life of mankind. Once this concept of science as a process of acquiring knowledge is recognised as the most useful way of regarding it, it follows that any definition of the subject matter and description of the methods of a science must be provisional only, and the more rapidly a science is developing the more conflicting ideas of its nature and methods will be found in books published at different times, or even at the same time. It also follows that any individual practitioner of the sciences who is consulted can do no more than give the definitions that he finds most useful, not claiming that they are absolutely true, but that to the best of his judgement no improvement can be made upon them in the light of contemporary knowledge.

¶ THE DEFINITION OF the subject matter of economics employed throughout this book is "The study of how, in a civilised society, one obtains a share in what other people have produced, and of how the total product of society changes and is determined". By a "civilised" society in this context is meant nothing more than a society in which there is a recognised legal system which defines rights and property. (The rights need not be the same for everybody, as in feudal society: property may be so defined, as in Soviet society, that certain kinds can only be held by the state. All that is involved in the conception of "a legal system" is the existence of a framework of law and custom inside which individuals and institutions can plan their activities, free from completely unpredictable interferences from others.)

In order to understand in full why this definition was chosen it will be necessary to read the whole of this book, but at this stage some questions may be cleared up by comparing three other famous definitions. Marshall defined economics as "a study of mankind in the ordinary business of life: it examines that part of individual and social action which is most closely connected with the attainment and with the use of the material requisites of wellbeing". Marx, in the preface to *Capital* stated that the object of his work was "to reveal the economic law of motion of modern society"; "modern society" for him meant a free enterprise economy, which he considered to be a system whereby the owners of capital contrived to live as parasites upon the product of the worker, as the feudal landowners had done before them, and to be moving toward inevitable collapse or transformation. Many modern economists would favour a third definition which states that the object of the science is "to explain how scarce resources are distributed between alternative uses."

The first of these definitions ignores the element of conflict which is always potentially and often actually present in economic relationships; moreover it conveys the impression that the "ordinary business of life" has a stability of volume and texture which, in fact, it lacks. The second emphasises the part played by the clash of interest to the exclusion of all else, ignoring the wide field within which economic relationships are co-operative, even within a formally competitive economy; while it emphasises also the changing nature of contemporary economic life it is concerned with the laws of "capitalism" only, and does not allow for the possibility that formal economic propositions may be found, as they may, which hold good for any civilised society.

The third has a universality which the others lack, in that problems of choice inevitably arise when men have

to "economise" in something of which they have not as much as they would like. It is in this sense too universal. The problem of choice confronted Robinson Crusoe on his island, but his alternatives were all between different uses of his own labour; the essence of practical economic problems is that they are social ones, involving the mutual or antagonist interests of groups of *different* people. On the other hand it is too narrow, in that all economic problems are not those of choice. Some, like those relating to employment policy, are problems of social organisation and of the strategy of opposing interests.

The definition of the subject matter of economics chosen for this work seeks to avoid these defects and, at the same time, to direct the reader's attention to the more vital and permanent economic problems. The manner in which the social product is shared can range, at different times and in different circumstances, from naked exploitation to free and complete co-operation, formal or tacit. The total product of society has grown with unparalleled rapidity during the last few centuries, while its growth, more particularly in this century, has been marked by an irregularity which has threatened to render unstable the whole of our contemporary institutions. The technique of economic analysis which we now possess provides us with a self-consistent and systematic method of analysis which, while far from perfect or complete, appears to be compatible with most of the known facts and goes far to explain them.

¶ **WHATEVER FORMAL DEFINITION** of economics be adopted, however, there is little doubt as to the sort of questions which are present in the mind of the normal man when he thinks of the subject. They fall into two groups: those relating to the economic aspect of world affairs, and those relating to his personal life. Will there be another world depression? Will the British

standard of living recover? Should I buy a house now, or wait? What makes everything so expensive? There is much greater agreement between economists as to the methods to be employed in seeking answers to these questions than there is about definitions: in fact there is only one main disagreement, and that is less about method than about objectives. This is the difference over the theory of value. Most contemporary economists consider that the ratio in which goods exchange, or their relative prices, depends on the relative extent to which the demand of those who have anything to offer in exchange has already been satisfied. On the other hand, the followers of Marx argue that the value of goods depends upon the amount of socially necessary labour time embodied in them. But what the Marxists mean by "value" is not quite the same thing as price. At a latter stage in the book this question is taken up again, and a reconciliation of the two methods is attempted. Here all that is needed is to explain why the former method is employed in the next few chapters.

The present position of the theory of value in economic science can only be understood against the background of its own history, and the history of the social framework which it has been called into being to interpret. The first systematic attempts to build up a body of theoretical reasoning explaining prices, wages, rent and interest took place in the eighteenth century, and were induced by the general changes in production, commerce, and banking, resulting from the introduction of improved methods of transport and the employment of machinery. Adam Smith, the first to produce an entire system of explanation, entitled his work *An Inquiry into the Nature and Causes of the Wealth of Nations*: the early economists were quite sure that they knew what "wealth" was. In this respect it was characteristic of their system; indeed of human

reasoning in general, which always tends to explain to-day in terms of yesterday. Confronted with the introduction of machinery, the problems created by which had largely brought their science into being, they sought to explain prices in terms of the relative labour cost of production, and to explain wages by the cost of subsistence of the worker. In this, as in their assumption that the conditions of demand could be taken for granted and ignored, they reflected the earlier and more static conditions from which the world was emerging. They identified themselves closely with the emerging dominance of the private capitalist, and their work was largely devoted to explaining the extent to which free enterprise, developing the new opportunities which inventions were creating, could increase the national wealth. Much of the work which was then done, particularly in the fields of international trade and the theory of money, is of permanent scientific value. Their criterion was rationality. From any given selection of productive resources, how would the maximum amount of wealth be produced? Their answer was, "By letting the forces of self-interest have free play". To the world of to-day this seems unbelievably naive; moreover their system was not internally coherent. Prices depended, for them, upon the cost of production, for which labour-time was used as "short-hand", and within which the part played by productive equipment was never properly explained. Profits, they assumed, would be levelled out by competition; they were regarded essentially as a residue over wages, which were in turn determined in magnitude by the cost of labour's subsistence, and by the amount of rent which the pressure of population upon agricultural land allowed the landlords to abstract. And their concept of national wealth excluded the subsistence of the labourers, who were "means of production" and outside the calculation.

From these "classical" economists two main schools of thought developed. Marx seized upon the contradiction between the assumption that "socially necessary labour" determined the value of goods, and the obvious fact that the manual worker did not get the whole of the proceeds. From this basis he built up a theory of the development of economic and political stresses within the capitalist system, in which philosophy and history play as large a part as economics. To parts of this we shall return when dealing with unemployment: it must here be noted that the Marxist system can hardly be held to explain the formation of prices because it does not take into account the productivity of capital equipment, and does not claim to have validity outside the social institutions of capitalism. It is a theory of exploitation: it may be that this is the most fruitful approach to many contemporary problems, but it cannot—any more than the classical economists—explain why a pound of butter costs what it does or why a brick-layer's wages stand where they do. It sought to explain organic contradictions in the structure of society, rather than to resolve the analytical problem of explaining how prices are determined.

In the words of a distinguished contemporary economist:—

"The orthodox economists have been much pre-occupied with elegant elaborations of minor problems, which distract the attention of their pupils from the uncongenial realities of the modern world, and the development of abstract argument has run far ahead of any possibility of empirical verification. Marx's intellectual tools are far cruder, but his sense of reality is far stronger, and his argument towers above their intricate constructions in rough and gloomy grandeur."

The other development was the emergence of the school which, adhering to the concept of "rationality" funda-

mental to the classical economists, went back and questioned their foundations, abandoning the cost of production as the basic explanation of prices in favour of the choice of the consumer. By the third quarter of the last century it was clear that economic theories which did not allow for wages to rise above the cost of subsistence, and which did not find room for the productive power of machinery in explaining prices, were gravely inadequate.

The new school said, in effect, "How would rational men behave in arranging the expenditure of their income between different goods, in selling their services to others to obtain an earned income, or in buying the services and products of others in order to engage in production for themselves or the market?" The answer to which they came was that rational men would so arrange their expenditure that the last penny spent in one direction was as productive of satisfaction as the last penny spent in another. When circumstances enabled them to bargain freely about the sale of their labour they would so arrange the working day that the last unit of leisure given up was of equal subjective value to the last unit of income acquired. From this basis the modern technique of economic analysis is built up. (These statements about rationality do not involve the assumption that men are *wise*—that they desire only what is "good for them". But they do involve the assumption that, whether ends are wisely or foolishly chosen, means are related to them. Without postulating "rational" conduct in this sense there can be no scientific deductions about economic conduct.) Observably, men do behave like this; consumers *do* buy more than one commodity (even Falstaff bought a little bread to go with his wine); there are limits to the amount of work which overtime rates can coax out of labour. So, if they are being rational, the "utility" or "satisfaction" the consumer gets from each single successive increase in any one line of

expenditure *must* decline as his supply increases (or Falstaff would buy no bread at all); the value of leisure at the "margin" must grow as work cuts into it, that of income must decline as more is earned. This is the basic theory of diminishing marginal utility.

¶ THIS APPROACH TO economics seems to call for a new definition of the object of the science, thus opening up the controversy to which reference has been made already. The concept of "wealth" as a directly measurable quantity, and of the function of the economist as prescribing for its maximum increase, was based on the assumption that the economist knew in an absolute sense what was "good" for society in general. Few modern economists would make this claim; it involves a synthetic judgement, of an essentially political nature, bringing together social and ethical judgements as well as economic ones. Economic analysis is now conceived to be concerned not with ends, but with means. Taking human "wants" on the one hand (without passing judgement upon their wisdom, or examining their origin) and the obstacles to their satisfaction on the other (which are mainly the conflicting wants of other people, and the niggardliness of nature) the economist studies the manner in which scarce resources can be distributed between alternative uses in order to provide the greatest satisfaction. Or, alternatively, one may say that he is concerned with the *efficiency* of economic life: taking for granted the contemporary techniques of production (which are the responsibility of the physical scientist) he is concerned with those other factors like the distribution of labour and capital or the standards and practice of commercial life which have a bearing on the total output derived from a given "input" of labour and physical resources. But that does not complete his task. While renouncing any claim to know *how* society should live, it is clear that a higher standard of

living, i.e., more of what people do seem to want, is better than a lower one: he must therefore devise statistical and other techniques for measuring changes in the volume of goods and services which the common man enjoys. Moreover he must draw attention to ways in which it can be increased. Very frequently it occurs that the main force depressing the standard of living is the existence of unemployment; the economist cannot escape responsibility for diagnosing the causes of unemployment and prescribing for its cure. Nor does this exhaust his responsibilities. It follows from the fact that as the supply of any one commodity to the consumer increases the value to him of successive increments becomes less and less, that the same thing is true for the whole of his income. If that is true, then it follows that for any given stock of goods to be distributed between a group of people, it is very nearly certain that the more equally they are distributed the greater will be the total enjoyment which they will afford. If they were equally distributed at first, and then the shares of some people were increased while those of others were correspondingly cut down, then each successive loss to the losers would be more painful than the previous one, while each successive addition to the supplies of the fortunate would, while still welcome, give less pleasure than the former ones. This is very nearly, but not quite, certain, because while one can be quite sure that for each individual it works like that, we cannot be so sure that everybody's capacity for suffering or enjoyment is the same. If two men, one with an income of £10,000 and the other earning £200, each lose a pound note then, obviously, it is more serious for the latter than for the former. What cannot be proved is that the actual happiness of the one is impaired the most, because happiness cannot be measured like weight or temperature, even by the psychologist. The rich man might say "I am an ex-

quisitely sensitive creature, attuned by education and the enjoyment of the arts to extract the utmost from my expenditure, while you are a dull insensitive clod, coarsened by beer and excessive labour until you are hardly capable of sensation. Therefore my sense of loss is the greater." The matter is incapable of logical proof, but the kind of argument which has to be produced to keep it open indicates when the balance of probability lies. The assumption that, roughly speaking, human capacity for enjoyment may be regarded as equal is an assumption only, but it may be held to conform somewhat more closely to the liberal and Christian tradition than its denial. If it be accepted, then it follows that the economist is concerned with the distribution of the national income between individuals, as well as with its magnitude and the efficiency with which it is produced. Therefore the gap between the objectives of the classical economists and the moderns is less wide than at first it seemed to be. The difference lies in the more adequate technique of analysis now adopted, and in the greater clarity with which, in consequence, problems can be defined.

¶ THE LAW OF diminishing marginal utility is one of the two basic concepts now employed in dealing with economic problems. The other which must now, equally briefly, be introduced, is the law of varying proportions. The former is psychological in that it relates to human conduct in "valuing" things. The latter is physical. Goods are produced by the application of labour to natural resources, aided by tools of greater or less complexity embodying production undertaken in the past. In the contemporary economic set-up capital equipment bulks very largely but production under any circumstances employs all three factors, except perhaps in picking wild fruit or tickling trout. Labour, land, and capital are the titles by which the three fundamental factors of pro-

duction are commonly known. The formal definition of the law of varying proportions is "If in production the quantity of all factors of production except one are kept constant, and the other factor of production employed in conjunction with them is steadily increased, starting from zero, then the total output will first rise and then fall".

The full implications of this fact will be brought out later: for the present the task is to make clear why it is, and must be, true. The most usual example to take is that of a farm. Quite clearly if one man tries to work a fair-sized farm alone—not confining his efforts to the size of patch he can handle easily, because that would beg the question about the proportions of the factors of production which is what we are investigating, but spreading his labour over the whole farm—he will produce almost nothing. Before he has finished ploughing it will be time to sow, before he has reaped half of what he has had time to sow in a hurried and haphazard way the corn will be rotten, and all will be choked with weeds. With another man to help, the crop will be much more than doubled: with three, probably more than trebled. The total output will rise, the output per man will rise, and the additional output which each successive man adds to the total will be greater than that of his predecessor. But, as the labour force increases, a point will be reached at which this will cease to be true. When a sufficient number of men have been engaged the output *per man* will have risen as high as the existing technique of farming permits on a farm of that size. The total yield of the farm, however, can be pushed beyond this point. Whether it will "pay" to do so or not depends on whether land or labour is the more "scarce": in a newly developed country where land is free no one will bother about going beyond the point when output *per man* is at a maximum. If more food is needed, more land will be taken up. But in an old country, where

rents are high, the total yield from the farm will have to be taken into account even if this means a slightly lower output per *man*. To follow out the argument: as still more men are taken on the total output will continue to rise, but the successive addition resulting from the work of each man, and thus increasing total output, will decline. Soon each new man will be doing jobs which are almost unproductive, weeding crops already fairly clean, or gleaning after the reapers. Ultimately the absolute maximum which can be got from the farm with any amount of labour would be reached: this would only in practice take place if labour was absolutely free, as on a prison farm. It is never reached in commercial farming, but in some very backward countries where land is scarce, where labour is very cheap, and agriculture is almost like gardening, it is sometimes approached.

With any given piece of capital equipment, like a factory, the same thing is obviously true. When production is well below the level for which the plant was designed total production and output per head are low: both rise as the designed output is approached, and the latter declines as it is passed. Otherwise there would have been no need to build new factories for war-time production. The logic of the argument holds for labour too. A craftsman without tools can make nothing. With a few simple tools he can commence production; as his equipment improves he can turn out a more than proportionately greater output. But a point will be reached at which the additional output which a further addition to his stock of tools will produce will be less than that resulting from previous additions. Otherwise, on piecework, he could go on increasing his earnings indefinitely by buying more tools, but working no harder. What all this comes to is that when there is any possibility within the range of known technique of doing a particular job in different

ways, i.e. economising in expensive labour and using capital lavishly, as in some branches of U.S. industry, or working three shifts a day to make the most of machinery because it is dearer than labour, as in Japan, the appropriate local method will tend to be chosen. The individual business man will try to hire or buy those factors of production which are most productive for his particular job, relative to their local price. If he owns a farm and can afford to hire labour at existing wage rates at all, then he will not think of stopping all the time product per man is going up: if wages are £4 per week, he will not hire *any* labour unless he thinks that the week's work of each man employed will add more than £4 to the value of the crop. Therefore he will only stop when the estimated value of the output added by the *last man* is equal to the current wage rate. So he is only interested in how much labour he will hire over the range when output per man is *falling*. Also, if he has a factory and employs a fixed labour force, he will add to the equipment of the factory all the time the cost of maintaining the new machines, writing off depreciation and obsolescence, and paying or charging up the current rate of interest on their value is together less than the amount which he estimates the value of their output will add to his income. He will not buy any new gear unless this condition is fulfilled. So in this case too, only the range of declining output enters into practical calculations. Therefore it is possible to generalise, saying that what is important about the law of varying proportions is that *from the point of view of the individual business man* the factors of production always appear to show diminishing returns. If, as the result of an invention, or the recognition of a hitherto unutilised opportunity, "increasing returns" show themselves, they are instantly converted to the general pattern by increasing the use of the factor concerned, because of the obvious profitability of so doing.

These, therefore, are the two basic tools of economic analysis. It is clear that taken by themselves they cannot carry the process of explanation very far. Like mathematical concepts, they are tautologies, self-contained truths. If people behave rationally when they spread their income over a pattern of diversified consumption, then the law of diminishing marginal utility *must* be true. If there is more than one factor of production, i.e. if you get different results from combining labour, land and capital in different proportions, or if in other words there is a problem of "substitution" confronting the business man, the law of varying proportions *must* be true. Obviously, however, most of economic science must lie in the observation of events and the careful application of the principles.

¶ THE MOST USEFUL way in which to bring out clearly the limitations of the basic concepts is to seek for exceptions to them. Can any case be found in which, as the rate of consumption of a commodity increases, the satisfaction derived from each successive unit acquired does not decrease? Will not the stamp collector give almost anything for the one stamp he needs to complete a series? Yes, but this takes the wrong unit for an example: it is not the one stamp, which for him is so valuable because it completes the set, but the *set*. He will *not* be so keen to possess a second identical set: any stamp collecting journal is full of offers to swap whole sets of stamps of which the possessor has a duplicate, in order to get stamps needed to complete other sets. In the same way one leg of a pair of trousers is of less value than the second leg which makes the pair! The law is put forward as an explanation of economic conduct, and must thus be related to the units in terms of which one actually arranges one's affairs. This rules out another exception which it is possible to suggest. A teaspoonful of beer is no use to a

thirsty man, and each successive teaspoonful up to perhaps a quarter of a pint will no doubt give increasing satisfaction. But no one drinks beer from teaspoons, because there is no satisfaction to be derived from such conduct; *nothing* can diminish no further.

A quite different objection which is sometimes advanced gives an example like that of a man buying a book on a subject with which he was hitherto unacquainted, developing a growing interest in the subject, and spending more and more time and money upon it. The development of addictions to tobacco and alcohol as well as to scholarship are sometimes similarly cited. Criticism of this kind is more subtle: it can be refuted but in so doing a serious limitation to the usefulness of the law is revealed. All these examples show tastes changing and developing *through time*. (It is hoped that the reader of this book will have undergone certain mental changes by the time he has completed it, and the effect of the cumulative consumption of narcotics is notorious.) There is nothing in the equipment of the economist which will enable him to anticipate how tastes will change: he has to take them as they are at any given time. The law of diminishing marginal utility derives, as has been shown, from the logic of choice, and choice must be between alternatives at a simultaneous point of time. It may well involve assumptions about the future, as when a man decides to save now in order to enjoy the proceeds to-morrow. To-morrow when it comes may find him wishing that he had saved more, or less, but the choice must be made to-day. One can be sure that, while a man's tastes are the same, any increase in the rate at which he consumes anything will show a diminution in the specific satisfaction he gets from each additional unit of a size capable of being appreciated at all. Total satisfaction will increase, but it will increase more slowly than consumption, so that the

marginal enjoyment or utility, that attributable to the last unit, will be falling. But it is anybody's guess how fast and in what direction his tastes will change. Advertisements shriek at the consumer from the hoardings, and new products appear on the market every day. On the other hand, particularly with food and other basic human needs and particularly among the people with low incomes who make up the bulk of any society, there is a considerable stability about consumption habits. When the economist is employing the concept to estimate future events he must use judgement and careful observation, and relate his conclusion closely to what is known about the particular type of market which he is investigating. All that the law of declining marginal utility can tell him is how, at any given moment, the consumer will behave. So, as will be seen later, for this and other reasons it is not possible completely to explain the way in which prices are determined simply by applying the law.

Much the same difficulties occur in the application of the law of varying proportions: similarly, an examination of possible objections brings them out clearly and may at the same time serve more exactly to define the law. It may for example be objected that often a factory could double its output, and thus reduce its cost of production by spreading the cost of the fixed plant over a larger number of units, if production were not limited by the difficulty of selling the product. In this case it might appear that labour employed in conjunction with the fixed plant was showing an increasing output per man at the point where selling difficulties brought production to a stop. But all that this proves is that, as a moment's reflection will show, capital equipment has to be erected in indivisible units, the size of which is determined fairly closely by technical consideration. If in order to produce at all at reasonable costs a plant must be erected of a size

which the anticipated volume of sales will not allow to be fully utilised, but which is still cheaper than turning out the goods by hand, this state of affairs is exactly what the law would predict. That is why it is useful to remember that the output per unit of the factor which is changing will *first rise* and then fall, although except when the extent of the market is insufficient decreasing returns are universal. On a previous page it was stated that from the point of view of the individual business man the employment of a factor would only be brought to an end when *in his eyes* it showed diminishing returns. When its product cannot be sold at prices which he finds satisfactory, the factor does, to him, show diminishing returns.

As in the case of diminishing marginal utility, in applying the law of varying proportions the deciding factor is time. It is not a valid criticism of the law to show historical examples in which more and more labour gets increasing returns from a series of re-investments of the same sum of capital in machinery of increasing technical efficiency, or where one man works more and more land to progressively greater advantage as the efficiency of agricultural implements improves. As one is confined to a period during which tastes are unchanged when applying the former law, so in this case one is confined to a period during which technique is not improved. The current rate of invention is quite high and should accelerate with the development of science: the economist is certainly not the man who can foresee what will be invented next, nor what the results of the next invention will be upon industry, though he can often hazard a pretty good guess in what field it will occur.

¶ To REVIEW THE position therefore; both laws can only produce results valid for the circumstances of a very short period: when the circumstances change the laws will of course still apply to the new ones, but they

will give different results. They are static in character, like all tautologies or mathematical truths. As our modern economic system is essentially dynamic, either rapidly accumulating capital and starting new industries, or overbalancing into unemployment when it slows down (like a man on a bicycle) this makes their application difficult. Applied to a given set of circumstances, however, it would seem at first sight as if they gave a fairly simple explanation of how prices are determined. If we can be sure that the marginal utility of everything declines as more of it is acquired, then it would appear that only if prices fell would the consumer increase the purchases which he habitually made when once he had arranged his expenditure to suit his tastes. Thus falling prices would result from more goods coming upon the market. If we could be sure that this is true, and that an increase in the supply of any one product could only be obtained (while technique remained unaltered) at the expense of higher costs of production, then the explanation of market prices would be simple. As supplies increased costs would rise and prices would fall: as prices rose production would be stimulated and demand checked. The two opposing forces of demand and supply would determine prices, and the economic system would fall into a natural balance, which would be stable all the time that tastes and technique remained unchanged. At first sight it would seem that the law of varying proportions would ensure that costs would rise whenever the out-put of any one kind of goods increased, except for the case when previous demand had not allowed the full utilisation of a piece of indivisible equipment. It takes time to install new plant, and while the stock of specialised equipment is unaltered the only way to increase output is to employ more labour to work it. This would, as has been seen, operate under conditions of decreasing marginal productivity, and so costs would

rise. But it must be noted that we have now brought in another condition, which still further shortens the period in which we can be sure of our results: not only must technique be unaltered, but so must the supply of fixed capital equipment. If one inquires what would happen if the existing equipment of the industry were reduplicated, laying down plant employing the previous proportions of labour, land and capital and thus avoiding the problem of decreasing returns, one at once raises two important questions. If full employment exists, to get the labour and capital from other employments will involve paying higher prices than they are already commanding, which will upset the whole price structure in an almost unpredictable way. If there is unemployment on any large scale, the men so brought into employment will earn incomes which they did not previously possess; therefore demand will rise. Increasing supply may thus increase demand. Consideration of this point takes us back to the behaviour of the consumer. Another condition must now be laid down before we can deduce from our two basic laws how prices will behave. Not only the tastes, but also the income of the consumer must remain unaltered. Otherwise he may easily buy more goods as his income increases, even although his tastes are unaltered and thus marginal utility is declining, because as it increases the marginal utility of income as a whole also declines. Both the new money with which he buys the goods and the fresh additions to his supply of goods mean less to him than previous increases in either, although they increase his total satisfaction. Once this point has been grasped, two others follow it logically. Changes in income upset the simple balance of supply and demand: a change in price can of itself alter one's effective income. If an unemployed man's wife spends all her income on bread, and the price of bread falls by half, then her effective income is doubled.

Probably she will buy *less* bread, of which the price is halved, and spend the money saved on more amusing food. There is nothing to contradict the law of declining marginal utility, properly defined, in this (for proof see the appendix); her tastes may be assumed to remain the same, but her income has increased. This is an extreme case, but all changes in price alter the consumer's income to a certain extent. It makes the application of the law of diminishing marginal utility to explaining prices very ticklish. While on the question of income stability it must be noted, too, that among the "tastes" which have been assumed to be constant must be reckoned the desire for money as such. If, while the consumer's income is unaltered and his proclivity for different consumer's goods is unchanged, he suddenly starts to accumulate money, the effect on prices will be the same as if his income had gone down.

Finally, there is one more condition which must be fulfilled before we can argue from stable tastes to automatically balancing supply and demand. If prices rise, and consumers in the main take this as a sign that they are likely to rise further, they will buy up all that their cash resources permit, not because their tastes have changed, but because they wish to satisfy them as freely as possible in the future, when they think prices will be higher. The same argument may apply the other way: falling prices may lead to the expectation of a further fall, and thus to lessened demand in the present. Such speculative purchases or refusals to purchase must also be worked into any realistic picture.

It should by now be clear that the two basic tools of economic analysis are not easy to use, and that observation and a sense of reality and proportion are essential for the application of economic science.

II

THE LOGIC OF ECONOMICS

¶ WHAT SORT OF a world would one be in which the two theoretical tools of the economist could be applied with absolute confidence to explain economic events, not qualified by consideration of the social and political structure of the society concerned, nor of its history? In other words, what sort of a society would it be in which economic life could be explained from first principles alone? The question is worth an attempt to answer, because by reference to such a working model and by due recognition of its limitations, the proper scope of the purely deductive method in economics can be delimited, and consequently the field which must be covered by the inductive method can be revealed. For the purposes of this argument a society in which productive equipment is private property, in which money is employed, and in which workers are not, as in the feudal world, tied down by law to one particular task or place, is pre-supposed. It is against this background that our modern economic life has developed, and most contemporary economic writing is an explanation and often a tacit defence of this system.

The previous chapter provides the assumptions on which such a system must be built. There must be no change in tastes. There must be no change in the amount of capital, and thus there can be no net saving, because the only way in which society as a whole can save is by embodying productive resources in stocks or in equipment: if labour or productive equipment is left unused because of a fall in consumption, waste, not saving, results.

There must be no unemployment. (It should be noted that these are not *all* the conditions laid down in the last chapter for the automic stability of economic life. One of the reasons for building up this working model is to see if it can be proved from first principles that a freely competitive system in which there was no change in taste or technique *must* be stable, or if this will only be the case in special circumstances.)

One must now proceed to build up this theoretical system by assuming that genuinely free choice can be exerted in the economic life of everyone: that all professions are open, that skill and ability can always command capital, that men can pass easily and without friction from one employment to another; in fact that the forces of self-interest are allowed completely free play, unhampered by class loyalties or prejudices, without restriction or guidance by the state. This system will be like no society that ever was. The value of the device lies in the manner in which it illustrates what would be the distribution of work within a society of free men, and how the goods produced would be brought into line with what consumers desired. Therefore the exercise is not fruitless; it is an example of the methods by which science proceeds. The world of pure chemical substances, with which the chemist experiments, is not the world of nature where all the chemicals are mixed up together and even the water is, from the chemist's viewpoint, dirty, but it is upon the basis of this hypothetical world that the knowledge is built up which enables us to anticipate how liquids, metals, and explosives will behave in any set of conditions. To apply his laboratory-acquired knowledge the chemist must know the degree of impurity of material outside the laboratory. To an even greater degree, as has been said already, the economist must be aware of the history and "texture" of the society to which he attempts to apply the result of

theoretical analysis: he must be able to evaluate the results of habit and prejudice, the force of group loyalties and of vested interest. It is here that the debatable ground of the science lies: not only do these "social data" qualify the application of pure theory to the real world to such an extent that some hold that only the facts of contemporary organisations need be studied, but the theory itself must be checked by comparison with the events which it is called upon to interpret, and some elements perhaps discarded if their sterility becomes obvious.

¶ WHAT COULD BE said, in advance of concrete experience, about the economic life of such a society in which tastes, techniques and capital equipment did not change, but men were free, both as consumers and producers, to choose the patterns of consumption and the productive occupations which suited them best? Let it be assumed that these conditions continued for a long time, and people had had ample time to adjust themselves. Without going very far into the question one can easily define the conditions of equilibrium—the conditions in which all were free to alter their occupation or their habits of consumption, but no one would wish to do so. In the first place, wages would be equal for all jobs of average skill and difficulty; those like mining which involved danger and discomfort would stand a little higher, so would those which involved a long and expensive training, like the practice of medicine; particularly soft and easy jobs and those involving a lot of leisure would stand lower. Similarly, the rate of returns on capital invested in machinery or buildings or stocks of raw material would everywhere be the same, with the addition of a premium for risk or uncertainty in those industries where the chance of loss was serious. It is self-evident that this would be the case, because no one would accept employment for long in a job in which the net advantage, taking both wages

and working conditions into account, was less than in others open to him, and no employer could retain labour in a job which compared unfavourably with others. No one would continue to invest money in an industry in which the return was less than that which, after discounting risk, was available elsewhere. The business man or entrepreneur, who gains a living by hiring labour, borrowing capital, renting land, and selling the results of the productive process which he sets on foot at prices above the cost to him of the factors which he employs, could only retain a profit just sufficient to outweigh the risk and uncertainty which he sustained. And the criterion would not be what *he* thought it was worth, but what *other* business men thought the risk was worth: if his profits were higher than this, new competitors would enter the field and reduce the level of profits.

Reflecting upon the role played by the business man in such a society brings up another point. It has been seen that net wages would be identical in all industries and how the same would be true of the net return to capital. How would the relative *shares* of labour and capital, the factors of production, in the proceeds of industry be determined, and how would rents be fixed? The answer lies in the fact that the business man would be constantly in search of the cheapest methods of production; adding to labour or capital when either afforded him the best chance of increasing his output most at least cost, substituting one for the other when this would serve the same end. Thus the market price for both labour and capital, which competition between workers and investors would keep *uniform*, would be fixed by the competition of business men at a *level* which in each case reflected the value which each factor added to production *at the margin of production*, i.e. at the point where, in fact, decisions about employment or investment were being made. The rent of land would be

fixed in the same way: business men pay for land what they think its use will add to the value of their product. They will pay no more: competition would see to it that they pay no less. There are, however, two differences between land and both capital and labour. First, the amount of land is given and unalterable, while payment for both labour and capital is a *supply price*, an inducement to continue the supply, which depends on human effort and upon "abstinence". Thus while changes in rents will determine what the landlords get, they will not affect the amount of land available. Secondly, while competition between workers and investors will tend to equalise the returns to labour and capital in similar employment, this will not be the case with land, because land is not homogeneous. Agricultural land differs in fertility, while industrial and commercial sites, like a street corner in a big town, are unique. Rent, then, is not a supply price in the sense of determining the total supply of land, though it may be the cost to one firm or industry of out-bidding others for a particular site. And differential rent is the element in the cost of hiring land which cannot be removed by competition because of the unique character of most plots of land. (In this sense there is an element of "rent" in the income of workers of unusual skill, or managers of exceptional capacity: competition cannot take it away.) The returns to labour and capital, together with the rent of land and the profits of the business man, must always add up to the total value of production. The profit of business men is what is left after the factors have been paid: if the gap between what labour or land or capital can add to the value of the product were wider than seems to the business world necessary to offset the risk of production, competition would force up factor prices. So the market price of any factor would equal what it was estimated that its employment at the margin

of production would add to the value of the product, after allowance had been made for profit.

¶ THIS, THEREFORE, WOULD determine the distribution of income under the conditions which were laid down. How would the equilibrium pattern of production, the relative quantities of different goods produced, be determined? All would be free to alter their consumption of different goods: what would be the conditions under which men would not wish to do so? Individual consumers would hold stocks of goods of all kinds: furniture, clothes, food, money and so on. Some of these stocks would be replaced day by day, like the stock of food; some, like furniture, would last for years; some, like money, might retain their magnitude but continually change their composition as they flowed out at one end and were replaced at the other. The reason for holding these stocks would be the "real income" of satisfaction derived from them: nutrition, comfort, warmth. In the case of money it would be the convenience and security derived from a stock of wealth in a general form which could take concrete shape in emergency as need arose. The relative expenditure of the consumer upon the maintenance of each stock would be determined by the rapidity with which *marginal* satisfaction declined as the flow of "real income" from each increased. If an acceleration in the rate of consumption of one good would cause more satisfaction than the loss which would be caused by the curtailment of expenditure elsewhere necessary to finance it, the increase would take place, until finally the consumer was able to get no more satisfaction out of his income by altering the pattern of expenditure. Obviously, when this point had been reached, the satisfaction derived from spending the last penny per week on newspapers would be equal to that derived from spending the last penny on food, and to the sense of well-being and security

derived from the last penny retained against emergency. Or, since one cannot buy everything in pennyworths, the *ratio* of marginal utilities of all goods consumed would be equal to the ratio of their prices. Thus, if beer was 1/- a pint and butter 1/6 a pound, and one would not buy less than a pint or a pound, the satisfaction derived from the last pint purchased per week would be in the ratio of 1 : 1½ to that derived from the last pound.

One further point emerges from this. If, in fact, beer was 1/- a pint, it would mean that the production of beer was at such a level that no one who had a shilling in his purse would rather have another pint than a shilling (otherwise he would alter his pattern of consumption and buy it) and no one who had a pint of beer to sell would rather have, say, 1 1¼d. than that pint (otherwise the output of beer would rise, and the price fall). So the *ratio* of marginal utilities would be the same for everybody, and would equal the ratio of market prices. The rich man who could spend freely would have a lot of everything, and the utility to him of his last purchase in every direction would be low, though his total satisfaction would be high. The poor man would spend sparingly, stopping perforce while the marginal utility of all goods was high to him, though his total satisfaction was low. But in both cases expenditure would settle down at the proportions when the ratios of the (low) marginal utilities of all the rich man's purchases, and the (high) marginal utilities of the poor man's purchases were each in the same ratio as market prices. If they were not, then purchasing would continue until either the marginal utility of the good which was still attractive fell to the same ratio with that of other goods as their relative prices, or until a similar result was brought about by an increase in the price.

Putting the equilibrium conditions of demand and of supply together, therefore, the following conditions

appear. The price of all goods and services would stand at such a level that:—

(a) no consumer would prefer to sacrifice any single marginal purchase to gain another;

(b) no worker would be willing, at the existing rates of wages and prices of consumers' goods, to increase his output to increase his consumption, or to decrease his consumption in order to increase his leisure. The same would be true of everybody in their capacity of potential savers and thus providers of capital, and of business men in respect of willingness to incur risk.

Thus all prices would reflect on the one side marginal utility; on the other, marginal cost. Prices would be just high enough to bring on to the market a quantity *just* large enough to induce consumers to prefer that quantity to any alternative increase of production which might be made in other fields. Cost, therefore, would be thought of as *alternative* cost: the consumer who wished to buy a saxophone would have to pay just enough, and no more, than was sufficient to keep the materials away from other consumers who wished to consume them in another shape, and similarly to direct labour from other uses and to outbid the worker for the use of his own time in leisure. The same would be the case with the man who wanted a cricket bat: despite the dissimilarity of their tastes the pricing system would link them together even if their requirements had only the element of demand for capital in common. Consumers would, as it were, vote with their pennies for the pattern of production they wanted.

This picture has certain attractions. True it allows for some consumers, if they own land or capital or possess managerial capacity or even exceptional manual skill, exercising far more "votes" than others, but on the other hand it is a picture of rational and voluntary adjustment in which everyone is at least getting the most that other

people think his contribution to production is worth, while he is putting in what he thinks the inducement offered to him is worth. If a system of graduated taxation levelling out incomes could be superimposed upon it the picture would gain greatly in social significance, and would be not unlike the distribution both of income and of productive resources in a hypothetical *stationary* socialist state. (It is, of course, nothing like the state of affairs in the U.S.S.R. which is in course of accumulating capital as fast as possible, nor is it like the conditions in any socialist society capable of emerging from present-day conditions, in which the main need is for more capital to lighten human labour. It is a picture of a society which is not *growing*.)

¶ THE TASK of defining the conditions of equilibrium in a static competitive society is now complete. If such a state were achieved against the background which it has been necessary to postulate almost certainly it would be stable, until tastes or techniques changed. But, still keeping within the basic assumptions, the next task is to see if this state of equilibrium would of necessity emerge from a freely competitive system, even with tastes unchanged and techniques unaltered, if the original distribution of resources and incomes was not the equilibrium one. Much depends upon this. If it can be proved that if only tastes and techniques did not change the forces of competition would bring about equilibrium conditions, then it is possible to think of the forces of the market like the force of gravity, and the conditions of equilibrium like the level of the sea, which is always being disturbed by wind and tide, but is as constantly being restored. What would happen if all the forces disturbing economic life as a result of altered ways of life and changes in methods of production were to cease for a hundred years?

To answer this question one must work out, step by

step, the manner in which prices and output would be determined in the conditions thus modified, still however confining the analysis to what can be deduced from the two basic laws. As was shown in the last chapter smooth progress towards a position of maximum satisfaction for all, or equilibrium, demands that increases in demand shall cause prices to rise, thus stimulating supply, while increases in supply, by satisfying demand, shall cause prices to fall. The central point in a free enterprise economy is the market, defined as the general circumstances surrounding the purchase and sale of consumers' goods and of the factors of production. Everyone wants, naturally, to sell as little of his energy, skill, or stock of goods as possible, and to buy as much as possible with the proceeds. In other words, he wishes that what he has to sell shall be scarce and dear, and that what he intends to buy shall be cheap and plentiful. In the market these conflicting interests come into conflict, and emerge as the forces determining market prices. What happens, however, does not wholly result from the preferences of the people who enter the market, but from the circumstances in which they come together to bargain.

Direct exchange is almost unknown in the contemporary world, but examining how it would take place explains how the price-level is built up. If two isolated individuals possess goods, each in such proportion that the marginal utility *to their possessors* is not equal, and if both are interested in some of the same goods, then exchange can take place, to their mutual advantage, all the time that the marginal utilities are different. If two peasants are facing the winter, one with little grain but an adequate stock of firewood, and the other with a lot of grain and practically no fuel, then clearly both will gain if they exchange. The one with the wood will offer wood, the one with the grain, grain, and they will continue to ex-

change until, for the one who is losing grain and getting wood the rise in the marginal utility of the grain he is losing and the fall in the marginal utility of the wood he is getting, equates the two marginal utilities. The reverse will have happened for the other. (Unless they had *not* been equal at first, no one would have gained from an exchange.)

But when they end up the stock which each will have left will depend upon the ratio of exchange. If the original "price" of wood in terms of grain had been high, then the man "selling" grain for wood would have cut heavily into his stock to get little wood. He would thus stop "buying" wood while he was still short of it, because he was running out of grain. The other man will have a lot more of both than if the original price hit upon had been less in his favour. But that original price could have been decided by nothing but chance in a purely isolated exchange: each wanted to dispose of his surplus to remedy his deficiency, and almost any price would have started a trade. When the first of the two to reach a point where, at the original price, no further exchange is worth while approaches that point, the second, if he wishes to continue, must lower his price. Final equilibrium can only be reached when the ratio of the marginal utilities is the same as the ratio of prices to both traders.

(Note that this is very much like the sort of bargaining that takes place between, e.g., Trade Unions and Employers' Associations, where there is only one bargainer on either side. There may easily be a wide range of indeterminacy.)

It may be objected that no two peasants are as isolated as all that: they must have had some idea of a "market price". What would the difference have been had there been two *villages*, one in the forests and one in the corn-fields, with exchange taking place in a public market? If

there was no pre-arranged agreement between the members of each group about prices, then there could only be one ratio of exchange ruling in the market. Otherwise anyone who could swap one ton of grain for one ton of wood with one person, and one ton of wood for two tons of grain with another, could double his stock of grain by two simple transactions, and then set out to acquire his stock of wood from the first wood-seller. If, in such a market, a price had originally ruled for wood which had been so high in terms of grain as to stimulate the flow of wood on to the market and run the grain-sellers short of grain (which happened to our isolated bargainers) then the ratio or "price" would change in favour of grain. In such a market the condition of equilibrium—the condition when all are free to alter their purchases but none do so—would be reached when the ratio of exchange between grain and wood was such that no one wanted to exchange any more. This implies that no one would rather have more wood than more grain, at the existing ratio. Note, however, that those who had little of either wood or grain to start with have still not got much of either. They have been able to make the most of what they had, but that is all.

¶ IF ALL THE wood-sellers agreed to trade as one unit, they could exploit the grain-sellers, provided the latter did not combine. At different "prices" for wood in terms of grain different total quantities of grain would be offered. The wood-sellers could then choose the best price, sell their wood at that price, and get the maximum amount of grain for it. Such a position is that of monopoly. The wood-sellers might go further, and follow a technique of discriminating monopoly, i.e. refuse to sell all their wood at one price, even the most profitable if it all had to be sold at one price, proceeding to drive a separate bargain with each grain-seller, thus exploiting most the need

This simple picture brings to light one set of circumstances in which progress towards equilibrium may not result from the interplay of conflicting interests. If there are a large number of independent buyers and sellers in the market, then the equilibrating forces are strong. But, given a seller in a position of monopoly, an increase in demand, i.e. in the prices which buyers are willing to give for any given quantity, may easily lead to a fall in supply if the total sum to be gained is greater, as it may well be, from selling a little at a high price than more at a lower price. (This very important question is dealt with more fully in a later chapter.) And given a similar favoured position on the part of the buyer, there is no *single* price which can be predicted even if all the facts are known.

This is the first point, therefore, on which the question of the inevitability of equilibrium emerging turns. The market must be *perfect*, i.e. so big that no one buyer or seller can dominate it. Suppose this is so, what of the reactions of the consumer to changes in price? Will these changes show an increase in demand when prices fall and vice versa?

¶ THE OPTIMUM SATISFACTION is obtained from expenditure when the *ratio* of marginal utilities is equal to the *ratio* of the prices of the smallest units usually sold. Thus if matches are 1½d. a box, and soap is 3d. a tablet, the condition of equilibrium for the individual will be reached when a rate of consumption of each is achieved which renders the marginal utility of soap twice that of matches.

If now the price of matches comes down to a penny, what will happen? At the existing rate of consumption the ratio of marginal utilities is $2 : 1$; the new price ratio is $3 : 1$; the consumer can now have three boxes of matches in place of a tablet of soap, instead of only two. Clearly if matches were worth the "sacrifice" of soap at the old ratio, they are more worth it at the new. So, with confidence, one can expect that *some* increase in the rate of consumption of matches will result. (Remember one thinks of *rates of consumption*, which is in fact how one behaves when arranging one's expenditure. So although one cannot buy less than one box of matches or one cake of soap, one's rate of, e.g. weekly, consumption can vary by almost infinitesimal degrees.)

Can one anticipate how the consumer will react? If one knew the *rates* at which marginal utilities were declining in respect of all the commodities which he buys, one could. Confining attention for the moment only to soap and matches it is clear what the final adjustment must be. If the ratio of prices is to be $3 : 1$, then the ratio of marginal utilities must be the same. This can be achieved, starting from a ratio of $2 : 1$, either by buying more matches, thus lowering their marginal utility, or by buying more matches *and* more soap. It might well be that the marginal utility of matches declines so fast, that to buy three boxes instead of two as an alternative to the last cake of soap bought would bring down the ratio of marginal utility to $3\frac{1}{2} : 1$, which would be too low. Consequently, in such a case, the sensible thing to do would be to *slightly* increase the consumption of soap, as well as that of matches. Indeed it is possible that some third commodity might come into the picture, if the decrease in the marginal utility of both soap and matches, on the assumption that the whole of the fall in price was absorbed in increasing their consumption, would bring

both their marginal utilities below that of the third commodity at its unchanged price.

Yet another possibility presents itself. Suppose that the marginal utility of matches declines very slowly as supply increases. In this case at the new price not only might more matches be bought, but more *money* might be spent on them, at the expense of other things. The final adjustment of *all* expenditure would still be to a ratio of marginal utilities equal to the ratio of prices, but the result of the change in price, which left the marginal utility of matches relative to other things too high, might be achieved by cutting down consumption on some other things, thus increasing their marginal utility, and spending the proceeds on matches at the new price until, after an increase in the rate of consumption, the marginal utility of matches came down to meet them.

Two points emerge from this. First, that preferences, and consequently reactions to changes in price, are very closely inter-related. Secondly, that when prices change there are *two* main effects. One is the effect on *income*: a fall in price, if one's own money income is unaltered, is an increase in real income: the examples above show this "new income" being spent (1) all on matches, (2) partly on matches and partly on soap, (3) partly on these, partly on a third commodity, according to the way in which, on different assumptions, marginal utilities declined. The other effect is that of *substitution*. All, or part of the effect of a change in price can be worked out in substituting one good for another, again on the appropriate assumptions about the relative rates at which the marginal utilities of different commodities decline as supply increases.

One can still further sort out this complex. Some types of goods are mainly *competitive*, like butter and margarine: normally, if the price of butter falls, consumption is greatly increased at the expense of margarine. Some types of

goods are *complementary*, like oil and oil-stoves. If the price of oil-stoves comes down, then more will be spent on oil at the old price, and, consequently, the whole of the fall in price cannot be absorbed by buying more oil-stoves. To complete the catalogue, there are *inferior* goods, a technical term given to those goods for which the demand is likely to be *lessened* (not only in terms of money spent, but also in the number of units sold) when prices fall. A simple example is bread, certain possible elements in the demand for which have previously been noted. If an unemployed family were living mainly on bread, which is normally the cheapest form of nourishment, and the price of bread were reduced, then, almost certainly, some of the income "set free" by the release would be spent on more palatable foodstuffs and less would be spent on bread. Suppose the ratio of the price of bread to that of meat had been 1 : 4 before the fall in price. The *ratio* of the marginal utilities of bread and of meat would have been the same had it been possible to have afforded a tiny scrap of meat, but as the family were probably hungry, both would have been *high*. (More probably no meat would have been bought, because bread at a high price would have absorbed all income while its marginal utility ratio to meat was still above the price ratio.) When the price ratio fell to 1 : 6 the final adjustment of marginal utilities would have to be in the same ratio but both would be *lower*: the family would be less hungry. The "income" effect would have swamped the "substitution" effect.

This complexity relating to the results of price changes is difficult to grasp, but to ignore it would be unreal. Men in society live in patterns, in part set by their choice, in part by the standards set for them by the group of which they are members. If one is a member of a social club, the owner of a car, the father of a family or the elder of a

chapel, one finds many of one's decisions about expenditure determined by circumstances. This may lead in some cases to an extreme lack of sensitiveness to certain price changes, but it is doubtful if, in general, these are strong enough to hinder the play of equilibrating forces.

¶ A CONVENIENT AND precise method of defining the relation of price to demand exists in the concept of the *elasticity of demand*. This is the relationship between the proportionate fall in price and the proportionate rise in demand resulting. It should always be given in the form of a number. If, for example, price falls by 1% and demand increases by 2%, the elasticity of demand is 2. (In this case, note that *more* money is being spent than before: the good in question is highly *competitive*.) Or, if a 1% fall in price engenders a 1% rise in demand, elasticity equals 1, or may be said to be unitary. The same amount of money is spent at the new price as at the old. If a 2% fall only causes a 1% rise, then elasticity is only $\frac{1}{2}$: less money is spent than before. It is clear that elasticity of demand affects the results which sellers will get from changes in price. Normally, as prices come down the scale, elasticity of demand, which tends to be high at high prices, starts to decline. All the time elasticity is more than 1, each fall in price means that more money is spent than before. When it is less than 1, less money is spent as a result of each successive fall. All the time that each cut in price brings in more money than before there is a gain to the seller to be derived from cutting the price, if he can produce more without an equivalent increase in cost. At each successive price to which he descends he gains a *marginal revenue*, the difference between his total takings at that price, and his total takings at the last price. Clearly this marginal revenue becomes zero when elasticity becomes unitary, i.e. when no more is spent at the new price than was spent at the next price above it. Equally it is obvious

that if elasticity is less than one, marginal revenue is negative, i.e. each successive price shows a *lower* total return to the seller than the one above. So if E (elasticity) $= 1$, MR (marginal revenue) $= 0$; if E is more than one, MR is positive; if E is less than one, MR is negative. These concepts will be found to be of great importance later, in analysing the way in which markets work in practice.

¶ A REAL DESTABILISING element in the normal market, lies in the possibility that an increase in price may be taken as an indication that prices are about to rise still further, and may thus stimulate demand. Similarly, a fall in price may discourage current purchases, in the hope that the fall may continue. (No one who witnessed during or after the 1939-45 war the manner in which an expectation that there was going to be a shortage of cigarettes created a market shortage of cigarettes can afford to ignore the importance of this type of conduct.) The existence of this kind of problem is linked up with the use of money; if one wishes to buy in advance of actual need for speculative purposes, i.e. because of an expected rise in price, or to postpone purchase in order to "speculate" on a fall, one does so by allowing one's holding of money to run down or to rise. This is quite consistent with one's tastes being unchanged and even one's desire to hold money for general purposes being unaltered. If it is expected that future price movements will either make it harder (rising prices) or easier (falling prices) to satisfy one's tastes as given, then one's reluctance to hold less or more money than usual will to a certain extent be overridden by these pressing special circumstances. The extent to which ordinary consumers can upset the market by speculation is limited, because they have not sufficient reserves to hold off purchase for long, or enough money to buy far ahead of requirements.

But with business men buying materials for production the case is different: an element of the speculative always enters into their purchases, and can be of great importance. If, in the majority of cases, their guesses are correct, so that a rise in price caused by an impending shortage is anticipated, thus choking off demand in advance and so lessening the final rise in price, all is well. It is often argued that the existence of organised speculative markets, in which specialists carry the burden of uncertainty, makes competitive speculation into a stabilising force.

The position in a well-organised produce market, in which there is little or no amateur speculation and in which attempts to organise "corners" are infrequent, will serve to illustrate the point at issue. The "normal" price of the product will tend to equal the cost of production and will also tend to form the basis of the "forward" quotation, as it is this which will determine the volume of output, producers tending to cover themselves by selling their product in advance. Spot, or current, prices will normally tend to exceed forward, as the margin of uncovered production will tend to be low, and the producer will require a higher price if he has to take the risk of carrying his own stock. If spot prices fall, relatively to forward prices, then the cost of "cover" to the producer (the difference between the price for which he can contract in advance to sell his product and that which he can get for any uncovered margin he now possesses) will fall, and he will tend to sell forward a larger proportion of his future output. At any time surplus stocks mean that in the past forward prices have been too high: shortage of stocks means that forward prices have been too low.

Speculative operations on the part of dealers consist of buying or selling forward. The former operation will be undertaken by those who anticipate that future prices will be higher than those contemplated by the market, as

denoted by the level of forward quotations. The immediate effect, other things being equal, will be to raise forward prices, which will inaugurate an increase in production and an increase in the proportion of output which is the subject of forward contracts. The latter operation will be undertaken by those who anticipate that future prices will be lower than those contemplated by the market: its immediate effect will be to lower forward prices somewhat, thus tending to diminish production and to reduce the proportion of output covered by forward contracts. If these two types of activity balance out, the net effect upon prices and production will be zero; if either preponderates, the effect of the former will be to correct the upward price movement to which it gives rise, by stimulating supply, while the effect of the latter will be to correct the downward price movement to which it gives rise, by causing a diminution of supply.

The most important characteristic of the "ideal" speculative market outlined above is that an increase in price stimulates an increased supply, and a decrease in price causes supply to diminish. Thus any excess of optimism or pessimism upon the part of speculators is self-corrective, and cannot become cumulative. This appears to be one universal criterion which may be applied to all speculative exchanges, and by conformity to which their usefulness may be judged. In an exchange in which an amateur element predominates it is not likely to be the case, and a fall in price may increase the market supply, while a rise in price diminishes it. Exchanges dealing with raw materials moving fairly steadily into manufacture are naturally less prone to experience conditions of negative elasticity of supply than are stock exchanges, but they are not necessarily free from it. If a temporary excess of optimism leads the holders of industrial stocks (of materials) to indulge in panic buying in anticipation of rising prices,

i.e. induces them to undertake essentially speculative transactions, the incursion of this new demand into the market will abnormally stimulate production. This means that the effect of an anticipated future shortage has been over-estimated, and the over-supply invoked will render the period of adjustment to normal conditions *longer* than would otherwise have been the case. Thus conditions in which the effect of a rise in price is to further increase demand, are incompatible with the efficient functioning of the market. A fall in price leading to an increase in market supply can also occur on a produce market if holders of industrial stocks respond to a temporary excess of pessimism by selling their stocks in the anticipation of a further fall in prices, thus increasing the current supply and still further discouraging production. This again will in the long run correct itself, but action of these two types will tend to increase rather than lessen the fluctuations of prices and output. It is not only goods which are bought and sold in a free enterprise economy, however. Titles to real property, stocks and shares, are constantly changing hands, and their value, based on estimate of future profit, is registered by stock exchange prices.

In order to see the effect of negative elasticity of demand and supply at its worst, one must go to the stock exchanges, where the corrective of a "through flow" of the objects of speculation is absent, and where overstimulated supply is not gradually used up nor shortages corrected by increased output. All that has been said concerning the economic gain to be derived from the existence of speculative markets, on either side, can be subsumed under a few words. If the conditions of demand in a speculative market are that a fall in price has the *immediate* effect of increasing demand, and if the conditions of supply are that a rise in price has the *immediate* effect of increasing supply (or of immediately putting on foot measures for increasing

supply), then the existence of that speculative market is a net gain to stability of the economy. On the other hand, the longer the period during which the response to a price movement is the reverse of this (this period has a "natural" limit on a produce exchange, but may be infinite on a stock exchange, as in the case of a security of which the investment value has been destroyed by fluctuations in price) the less the net gain and the greater the probability of loss.

The effect of speculation, therefore, if it is not entirely in the hands of experts kept in control by keen competition, may be to cause cumulative fluctuations in price rather than adjustment towards equilibrium. And the effect is not wholly confined to the market in which the change in price takes place. If there is an increase in the amount of money which business men wish to hold—and this is inevitable if they want to decrease their holding of goods—they will have to get the money they need from someone else. (All the money, all the time, belongs to somebody.) To get more money they will need to sell without buying; thus driving prices in general down. In other circumstances, when they wish to lessen their money holdings they will buy without selling, which will have the effect of driving prices up. So the destabilising effect may be considerable. There is nothing in our basic assumption of unchanged tastes and technique, or in the two laws, to prevent it.

¶ So FAR CONSIDERATION has been given to the action of a free market in general. When attention is once more directed to the special problems of production, more difficulties arise, and they arise out of the fact that in contemporary production the different factors have to be jointly employed. The conditions of supply for any one article are intimately linked up with the conditions of supply of all the goods which the producers of the first one

demand in exchange. (This comes out clearly if one considers the position of food supplies within Europe, after the 1939-45 war. In many areas food production had been allowed to fall off, because insufficient supplies of industrial products were available to render it worth the while of the peasant to produce for exchange.) In an exchange economy, supply is only one aspect of demand. The specialist offers his product or his labour as an expression of his demand for consumers' goods, in a manner only one stage more indirect than the action of his wife in spending the money proceeds. It is necessary, however, to go one step beyond the theory of exchange in order to deal with production. The reason why universal specialisation and the consequent exchange economy have developed is the greater efficiency of specialised production, the manner in which effort directed to *one* task exceeds in results effort divided between many. Thus one must consider in detail the way in which production in an exchange economy will operate, taking into account the fact that for different volumes of output in different industries the relationship between input of factors and output of goods will differ. This relationship, linking the quantity of a factor of production used with the resulting output, is termed the *technical coefficient*. The theory of exchange is developed, by bringing the technical coefficients into the picture, into the theory of production.

One may commence, like the classical economists, by considering how production would be regulated if considerations were so primitive that account need only be taken of one factor, labour. In order not to get too far away from contemporary economic conditions, however, let it be assumed that the worker does not own his product, but sells his labour to an entrepreneur, who buys labour-power and sells the product. The factors in the situation to consider are thus the price which the product will fetch,

the wages which the worker will get, and the productivity of labour. (The position is not unlike that which actually obtained in certain branches of the textile trade in the eighteenth century, when the worker worked at home on material supplied by the employer.)

The forces which will determine demand are known: given incomes and the prices of other goods, there will be a series of prices at which the consuming public will purchase different quantities of the product; the lower the price, the greater will be the offtake. Given the productivity of labour in any industry all the entrepreneurs will try to buy labour at a rate which will leave a gap between the wages paid and the value of the product. But, all the time this gap is there, each of them will be able to increase his profits by increasing output. If the entrepreneurs are in competition with each other this will result in prices coming down, as output grows, and probably in wages going up. If the technical coefficient is such that a unit of the product results from ten hours' labour, competition, if persisted in, will finally result in the price being equal to ten hours' wages, except for sufficient profit to offset the risk undertaken by the entrepreneur.

When this point has been reached, and cost is equal to price, there is nothing in the conditions *of this industry* to prevent it settling down there. Consider the position in other industries. There also if competition has worked in the same way hourly wages will equal the value of the product, divided by the number of hours needed to produce it, but prices may be higher because demand is less fully satisfied than in the first industry: if this is the case, then wages will be higher. If labour is free to move around, it will desert the first industry. If the entrepreneurs in the other industries can get labour from this one at wages slightly lower than they are paying, and they are in competition one with another, they will cut prices

and increase output and sales. In the first industry prices will rise as output falls, and wages will also rise. In the long run, if the process were allowed to work itself out wages would be equal in all industries, prices would be determined by the demand schedule on the one side and the technical coefficient, the number of hours' labour needed per unit of product, on the other. The quantity of each product produced would be that for which consumers on the margin, i.e. just willing to buy, were willing to pay a price embodying the number of hours determined by technical considerations.

This result of course would only come about if labour was in fact free to move round from job to job and indeed did so. The assumptions upon which this model is being built—legal freedom to move and no changes of technique—do not prove that in fact labour will move round freely. If there are too many workers in the hat trade and too few in steel-smelting, it does not follow that the difference in wages between the two trades will tempt hatters into the steel foundries, or ensure that they would be worth the normal smelter's wage if they got there. It is equally probable that low wages in the manufacture of hats, combined with unemployment, would make the hatters work longer and longer hours, turning out more and more of what the community would want less and less. So the fall in wages might well induce an increasing supply of labour, and become cumulative, particularly when failing physique due to malnutrition and overwork led to a falling output per hour. Again therefore, now in the case of the wages of labour, a fall in price might lead to an increased supply and a movement away from equilibrium. The labour market would not only have to be free, but also technically *perfect*, in the sense that "units of labour" were all alike and would move from one task to another without loss of efficiency or

consideration of personal comfort, before it could normally be assumed to be self-equilibrating. There is one further aspect of wages which may be examined to advantage against this simplified background because it provides us with the key to two very important economic problems.

Under such conditions, before labour becomes the slave of the belt or the efficiency expert and is reduced to a soulless repetition, the efficiency of individuals would vary widely. If time wages were equal, then the ability of the exceptional worker would give a bonus to his employer. If piece rates were the same for all, he would earn much more than his fellows. Now this is typical of the class of income previously mentioned and known as *rent*: its characteristic is that it arises out of the inequality of individual workers or specific pieces of land or equipment and thus cannot be reduced by competition, however keen, and cannot be destroyed, although it may be taken by someone else than the rent-earner. It is usually thought of in connection with land, but, as will be seen when labour and capital are considered, it is universal. If the technical coefficients (or efficiency in production) of individual productive units (or of individual firms) differ, then the price of the product will depend on marginal demand on the one hand, and on the marginal cost of production, that of the least efficient productive unit brought into play, on the other. Consumers on their intra-marginal purchases, for which they *would* have paid more, get a "consumers surplus": the intra-marginal producers gain a rent.

But if some workers are abnormally efficient, it does not follow that their exceptional ability would only show itself in the trade which they choose to follow, although they will clearly choose that trade in which it shows to the greatest advantage, as the surplus they earn over the marginal producer will then be at a maximum. If a man

can make both shoes and horseshoes with greater efficiency than the marginal producer who sets the market price for both, but his efficiency is greater in the former field of activity, then he will concentrate on making shoes, and will pay the market price for horseshoes when he wants them, although he could make them in less time than the man he pays to do so. He could save money by forging them himself, but would lose more in the earnings of shoe making which he would have to forego. The *comparative cost* would be higher. This is the essence of the law of comparative costs, which is considered to govern international trade. The efficiency of production is at a maximum when each country concentrates upon those products in which their comparative costs are lowest, and imports those where comparative costs are high. Even if one country can both grow wheat and smelt steel more cheaply than another, if it is *relatively* better at smelting steel it will get its wheat more cheaply in man hours if it imports wheat and pays for it with steel. The law of comparative costs, which Ricardo first applied to international trade, is, like the law of *rent*, a universal one permeating all economic life. The flow of labour and capital to markets when their reward is highest is impeded by frontiers; personal ability remains the natural property of its possessor. Thus both individuals and nations concentrate on those products in which their technical coefficients are the highest.

¶ THE SIMPLIFIED MODEL of production, employing one factor only, has explained how competition will determine the proportions in which goods are produced, and has introduced the laws of rent, and of comparative cost. It is not unlike the model of the classical economists, with the addition of the law of diminishing marginal utility, and it is not unreasonable to suppose that some approximation to this law, in order to explain

the proportions in which different goods were produced, was implicit in their reasoning. They also, it will be remembered, worked out the laws of rent and of comparative cost, although their range of application was too narrow. But the major economic problems of the modern world—the distribution of income between rich and poor, the tendency for unemployment to be always with us and sometimes to overwhelm us, the development of monopolies dominating the economic system—none of these have yet come into the picture, and little can be derived from the one-factor model, or from the classical economists, to explain them. The reason is all these are products of the capitalist system; to explain them one must abandon the single-factor analysis. Henceforward the argument proceeds on the assumption that more factors than one—roughly grouped as labour, capital and land—are employed, and that both land and capital are “productive” in the sense that the productivity of labour is higher when aided by tools and given access to natural resources. (It was of course implicit in the simplified model that some tools, some land was available, but it was assumed that the quantities were small, that they were equally distributed, and they were owned by their users.) It is now necessary to consider the contemporary world where capital employs labour, and not labour, capital, and where, in addition to the ownership of capital being in the hands of a separate class, the quantity of capital is very great.

Labour needs no definition. By land is denoted the natural powers of nature, in so far as they are scarce and are subject to appropriation, in fact in so far as they are associated with the utilisation of some part of the earth's surface, which may be fertile, or mineral-bearing, or merely “commercially productive” in that the location of the particular site renders production there cheaper than it might be elsewhere. Capital is a more complex concept.

It embodies, at any time, the stock of equipment, tools, raw materials and semi-finished products which are utilised in production. What all these have in common is that they represent stored-up labour: labour which has been put into tools instead of being applied directly to production, because dividing up labour into tool-making and tool-using can increase the total output of the amount of labour so divided compared with what its output would be if it were all directly applied to production without tools. It would appear, therefore, that if the maximum product is to be derived from the minimum of human effort, then there must be some single ideal proportion in which labour should be divided between tool-making and tool-using. Every time, however, under conditions of full employment, that labour is diverted from the direct production of consumers' goods to the production of "capital goods," the current output of consumers' goods is reduced and, until the new "tools" are ready and working, someone has to forego the income which might have been produced. (Unless indeed, there were men unemployed, in which case there would have been no immediate sacrifice, but the same future gain. This point, which is of the utmost importance, will be dealt with later.) If the accumulation of capital has been the result of private decisions, then to add to capital someone must have "saved". In so far as it has been the result of public decisions, as with the capital embodied in schools, income which might have been spent in consumption has been taken in taxation and spent on building. In the second case the sacrifice involved in creating capital is obvious. In the first the position is more ambiguous: historically considered the first accumulations of productive capital were made out of fortunes accumulated by war, or out of the proceeds of feudal estates, or out of the commercial fortunes largely created by the slow inflation which

followed the release of gold from the new world after about 1600: the real "sacrifice" was that of the masses who were exploited to create the fortunes. These first investments were enormously productive, and their yield made further accumulation easy. However, whether those who made the sacrifice enjoyed the results or not, clearly (except for the question of using unemployed labour) the accumulation of capital involves the sacrifice of present satisfaction. And as capital equipment wears out, and the money tied up in the depreciation funds which are built up to balance the wearing out becomes available for reinvestment, the question of whether the owners are to spend or to reinvest the money must perennially be decided. Solid as it seems, the capital structure is always "fluid" at the edges, and can be reduced, unless reinvestment is made attractive to its owners, by the consumption of accumulated depreciation funds. (One of the reasons why reconstruction after devastating wars is a quicker process than at first seems possible is that even under normal conditions a very large proportion of the goods in which capital is embodied must be replaced each year.) Land is permanent. the labour force changes slowly in magnitude: capital is the most volatile factor. Throughout this chapter, it will be recollected, the assumption is that the amount of capital remains unaltered.

It is typical of modern capitalist society that the organisation of production is in the hands of the entrepreneur, who hires labour at its market value, borrows money which he invests in capital goods, rents land, and lives on the difference between the value of the goods he produces and sells, and the cost of hiring the "factors of production" which produce them.

At this stage, then, reappears the *law of varying proportions*. All that has so far been said about the way in which production would be arranged and in which prices and

wages would be determined with only a single factor of production at work has been derived from the concept of diminishing marginal utility. The whole technique of economic analysis, it must be repeated, develops from this concept, and from the law of varying proportions. If a unit of one factor of production is employed jointly with units of another factor or factors, and if the number of units of the second factor is steadily increased, the total product will, sooner or later, cease to increase as rapidly as the units of the second factor are increasing. If this were not true, then, given enough labour, all the wheat the world needs could be grown in a flower pot; all the motors in the world could be made by one man if only he had enough capital equipment. Reflection on this point illuminates the term "factors of production". If there is more than one factor of production, i.e. different types of tools, workers or land, and they do *not* give different results when they are combined in different quantities, then there is no economic difference between them, i.e. it does not matter in what proportion they are jointly employed, or if one of them is employed in place of another. From the point of view of production they would be perfect substitutes. Thus the whole essence of there being more factors of production than one lies in the fact that they can only be substituted one for another to a limited extent. For purposes of strict economic analysis, therefore, whenever a possibility of substitution exists, more than one "factor" is present, even if the question is one of substituting one kind of labour for another or one type of capital equipment for another. The classification into land, labour and capital is social rather than strictly economic: it suffices however for most general purposes.

This explains why some industries operate under "increasing costs", some under "decreasing costs". Normally one would anticipate that if more of one com-

modity was demanded by the market than in the past, prices would at first rise, production would thus be stimulated, and new factors would flow into the industry until, competition having reduced their earnings to the normal level, the original price would be restored. But this is not always so. Other things being equal, i.e. assuming that no changes in the technique of production take place during the change, we find that an expansion of production will increase the costs of one industry, decrease those of another. Where the former is the case it is because the technical set-up of the industry demands the use of a high proportion of one factor of which the supply cannot be altered (like land for agriculture) and the expansion of the industry increases the demand for the factor, and thus its price. The costs of all industries which use this factor will rise, but those which employ a large proportion of it will rise most.

When costs decrease as production expands under conditions of unchanged technique, it is inevitably because some factor of production which is not divisible was not fully exploited before. (Remember a "factor of production" may be a specific tool, or plant.) Usually it means that some method of large-scale production, which was known to be possible before but which the use of which demand did not justify, has been put into operation. It is important for the clarity of one's thinking to distinguish between decreasing costs which result from the law of varying proportions, like this example, and about which one can therefore reason, and decreases in the cost of production which result from new inventions, and which have been ruled out of consideration during this chapter. The reason is that inventions cannot be predicted (although they are more likely to take place in expanding than in contracting industries because more people are thinking about their problems), while decreasing costs as defined above derive

from circumstances which are already present, and can therefore be included, in scientific reasoning about the problems of a given industry at a given time.

¶ IN THE "ONE-FACTOR" model the value of labour in any industry was determined by the value of its marginal product; competition, if the labour market was perfect, tended to equalise the value of the marginal product of one hour's labour in all industries. The same is true of the value of the other factors, only seeing that they are employed *jointly*, it is the value of the marginal *net* product of each factor which determines its price. The marginal net product of a factor is the alteration in the output of industry which results from a small change in the utilisation of the factor concerned, while the utilisation of the other factors remains unaltered. The manner in which this is established needs illustration. At any given moment the capital equipment of industry is in the main fixed, but the amount of labour employed can be varied: the level of wages ruling will have been determined by events in the past, in which trade union action will probably have played a part. If the industry is running well below capacity it is probable that the output per *man* will be low, but as output approaches the scale for which the plant was designed both the average output per man and the *marginal* output per man will begin to rise. (The "marginal output" is the specific addition to output resulting from taking on *one more man*.) Now all the time marginal output is rising it is clear that, if it is worth the entrepreneur paying the current wage rate at all, he will continue to take on more labour all the time it continues to rise: if marginal output, i.e. the net addition to output of each additional man is running 10/-, 11/-, 12/- per day, then if it is worth paying 10/- per day in wages to the first man it is even more profitable to pay it to his successors. Each successive employee adds more than the last to

gross profits. Now after a time, common sense, as formalised in the law of varying proportions, will indicate that the product of each additional man will commence to fall: adding more workers to the staff of a plant already fully staffed will obviously not increase output by amounts similar to those added by the addition of the earlier members of the staff. (Otherwise why was it necessary to build new factories for war production?) It will still be worth the while of the employer to take on more men up to the point where the net addition to the value of output made by the last man taken on just coincides with the wage rate.

If, when this adjustment has taken place in the whole of the industry, and it must do so if gross profits are to be as large as possible, there is a large reserve of unemployed among the class of labour usually employed, then wages will tend to fall, and labour to seek other employment. If, before this adjustment has been completed the supply of labour suitable for the industry runs out, then the appropriate rates of wages will tend to rise. Thus forces are set up which would tend to make the marginal net product of labour identical in the long run for all industries if the labour market was perfect, and to make wages, allowing for the relative personal amenities of, for example, shop-assisting over coalmining, roughly equal. (Of course many groups do not compete directly: a shortage of stevedores will have no immediate effect on the wages of university teachers, a fall in the wages of milliners will not threaten tea-tasters. And long before the process has time to work itself out, new changes will superimpose themselves. But, even if slowly and weakly, the process is always at work.) In the short run wages always *are* equal to the value of the marginal net product of labour to the employing firm, because employment is adjusted till they are. In the long run there may or may

not be a general tendency for wages in general to move towards the marginal net product of labour in industry in general.

It can now be explained more fully how the relative shares of labour, capital and land in the proceeds of industry are determined. When labour is employed jointly with other factors, instead of the volume of output varying in *direct* proportion with the labour employed in an industry (as in the one-factor model) the output of labour per head varies according to the share of land and equipment, out of a fixed stock, to which the workers have access. Labour is employed up to the point where the *net* addition to the income of the firm made by the last man engaged is equal to the wage rate. For the time being the equipment of the firm is fixed; the land has been rented for a period, the capital must stay in the form in which it is embodied, until it is worn out, and the most profitable use must be made of both. This will be done if production is carried on up to the point at which *marginal* costs (the addition to cost due to producing one more unit), which are composed of raw materials and labour costs, are equal to the net return to the firm of the last unit sold. But unless, when this has taken place, the return on the capital is not at least equal to what the entrepreneur thinks it would fetch if it was taken out of the business and added to the capital of some other business (*its* "marginal productivity") then, as soon as it can be moved, capital will leave the industry.

Thus the marginal productivity of labour, land, and capital are mutually determined. In the short run labour, which can be thrown out of employment without cost to the entrepreneur, is the factor which is adjusted. All the time that the entrepreneur is responsible for the interest on the money he has borrowed, and the land he has rented, he will make whatever return he can on them, but

he will hardly ever "throw them out of work". Capital *goods* wear out: as they do so constant minor decisions have to be made as to whether the depreciation fund is to be consumed or to be reinvested in the same industry or elsewhere. Less frequently and more irregularly leases fall in, and competition between entrepreneurs determines the future usage of each plot of land, according to the valuation at which its net contribution to production is estimated. Entrepreneurs themselves have, from time to time, to choose whether they will continue to accept the income which they anticipate from the industry in which they are operating (in return for bearing the uncertainties inseparable from production for competitive markets) or whether they will change their field of operation, or seek a salaried occupation and give up bearing uncertainty. In so far as there are elements in labour incomes (due to group advantages, or personal skill), or in the rates paid for the use of land (due to differential advantages of siting or fertility), or in entrepreneurs' incomes (due to personal skill or unique "contacts" with other entrepreneurs) which competition cannot diminish, an element of *rent* enters in. In the short run fixed capital equipment, which is for the time being tied to doing one job, earns "rent". But, otherwise, the earnings of all factors of production, including uncertainty-bearing, tend to be equal to entrepreneurs estimates of their net addition to output at the margin of production.

¶ ALL THIS HAS BEEN worked out on the assumption that monopoly was absent: this was not one of the limitations imposed on the argument at the start, but it will be recollected that in the course of analysing the working of markets in general it was found that when monopoly was present no determinate equilibrium could be expected. The question of how competition in fact

works, in the presence of strong elements of monopoly in the contemporary world, will be the subject of a later chapter. But one characteristic of a market free from monopoly must here be emphasised, as it is essential to the task of setting a limit to what can be learned from a purely theoretical treatment of economics. If there is to be no element of monopoly in the market served by a firm, then there must be so many firms producing an identical product that no single producer can see any connection between changes in his output and the market price. If he can, then he will follow a "price policy"; he will set his output at a level at which the price will be the most profitable one to him, in fact behave like a total or partial monopolist.

Let it be assumed then that the markets for all goods are "perfect" in that no element of monopoly is present. The original intention of this chapter, it will be recollected, was to see what could be learned about the world of economics from theory alone, and, after the conditions of equilibrium had been defined, an attempt was made to see if, given conditions of unaltered tastes and technique and unaltered total capital, conditions of equilibrium *must* of necessity emerge if things were left to work themselves out over a long period. This permits of an original position in which there may be too few firms in some industries fully to supply consumers' needs at prices compatible with competitive profits. Thus, for the time being, such firms will make excess profits: after a period of time, when new plant has been transferred from other industries (to satisfy the other condition that the total stock of capital must not change), new firms will start production and prices and profits will be reduced. But firms already in the market will not be able to tell how changes in their individual output will alter the price. Thus there will be no guarantee that the *right* number of

firms will enter the market: if there are too many prices will fall below normal, and losses will be made all round. If there are too few, then the attraction of high profits will remain. The only condition, in the absence of any monopolistic tendencies in the market, in which *just* enough firms would come in would be if one firm after another laid down a plant, finished it, started production, but still left profits abnormally high, until the last firm to enter just reduced profits to a normal level. The mathematical chances against this happening without co-ordination are enormous: if machinery for co-ordinating the inflow of firms existed it would be used to keep profits up and not to minimise them. So if the market is truly competitive there is just as likely to be continual fluctuations in price as the achievement of competitive equilibrium, while if it contains any element of monopoly then by definition such an equilibrium will be deliberately avoided!

¶ THIS COMPLETES THE examination of the limits of the purely deductive method in economics. Even when the static assumptions upon which they are based are presumed to hold good, it will be seen that further assumptions (which are *not* contained in the two basic laws of analysis, and must therefore depend upon induction—upon the inspection of the facts of a given situation) must be brought into the picture before it can be assumed that progress towards equilibrium is logically necessary. They relate to the extent to which the system is free from monopoly, to the perfect functioning of the speculative markets and of the labour market, and to the smoothness with which, given perfect competition, changes in the supply of capital to specific industries will take place. The enquiry has shown many ways in which the combined application of the basic laws to specific problems can, when given enough facts, provide effective tools for the

explanation of current problems. It has also revealed the limitations of the purely deductive method. In no way is this more clearly shown than in illustrating the static nature of the problems which alone, it can, solve unaided. Most of the problems of the contemporary world are dynamic ones, arising out of growth and change.

III

THE MODERN ECONOMIC SYSTEM IN ACTION

¶ THE PREVIOUS CHAPTER carried the work of explaining economics as far as can be done by logic unaided by observation and experience. It showed forces, which are always at work, in operation against a static background which enabled their final results to be seen. In order to do this it was necessary to assume that no changes in tastes, techniques, or the total amount of capital took place, and it was found that in order to get definite answers to many questions further assumptions about the perfection or imperfection of competition and about the speculator's interpretation of price changes had to be made. To do this for the purpose of a realistic enquiry about a given industry, or to form an estimate of whether for example, the introduction of price control for a commodity should or should not entail a rationing scheme, is legitimate and reasonable. One builds a wall of *ceteris paribus*, "let it be assumed that everything else remains unaltered," around the problem, and on that basis comes to a conclusion which is likely to be near enough right for practical purposes, providing that the industry is not so big that a change in it would have major effects on the national economy, or that the commodity is not similarly important. To do so one needs of course all the available facts about the situation, and a clear idea of the way in which competition in practice works in that particular field. This technique will be seen at work in the next chapter.

¶ THIS CHAPTER HOWEVER deals with the machinery of the whole economic system, not of its com-

ponent parts studied in isolation. The two logical tools of *diminishing marginal utility* and *varying proportions* remain the whole of the available analytical equipment, but they must now be applied not to an imaginary static world, but the world of reality. What are the main features of the modern economic world? One basic characteristic is that it depends upon the employment of power and machinery to maintain a standard of living much higher than has ever before been achieved before in the history of the world. Its physical basis is thus the existence of factories, mines, railways, power plant, and a mass of productive equipment. None of this was in existence two hundred years ago; all of it is the product of labour and has come into being as the result of individual decisions to invest (with the exception of the very large amounts of capital embodied in roads, schools and armaments, which have been the result chiefly of decisions made by those controlling the State). From these facts certain elements in the economic life of the modern world can be deduced with absolute certainty. As capital equipment has grown so fast there must be specialised industries producing it, of a magnitude determined by the rate of growth in the past, and thus depending for the full utilisation of their plant and the full employment of their specialised labour force upon a continuation of the past rate of expansion. Similarly, there must be deeply rooted habits of saving embedded in the social framework, because only deliberate decisions to devote resources to the creation of capital goods, rather than to enjoy them in consumption, can have set up these industries.

Not only is it a society which has obviously a deeply rooted habit of accumulation; it is a society of which the whole history is one of expansion. In the early eighteenth century the economic life of the world was mainly based upon handicraft and simple agriculture, principally de-

voted to providing subsistence for the farmer. Starting with the textile industries in England the new system, employing expensive power-operated equipment which was the private property of individuals, employing hired labour, meeting its costs by money payments and selling the proceeds for money, spread rapidly, and is still expanding. Much of the life of Asia to-day is still pre-capitalist. The same is true of parts of Africa, and the Pacific area. But the whole of North America, most of South America, the whole of Europe and many other areas in the world are now part of the modern economic system, producing by the aid of machinery and linked together by trade. In the U.S.S.R. also production proceeds on the basis of machinery, although there is a fundamental difference in the system of ownership and control as compared with the countries where equipment is mainly private and not public property.

¶ So MUCH FOR the physical basis of modern economic life, and what can be deduced therefrom. Its historical basis has no less significance. In the pre-capitalist era the general efficiency of production was so low that only by concentrating a wholly disproportionate share of the product of society in the hands of a few was any civilisation possible, or any such accumulation of capital as could take advantage of the opportunities for mechanised production offered by the growth of physical science in the seventeenth century. We know, both from the records of social history and from the fact that such concentrations of capital did take place, that such was the case. The two sources of wealth before machine production were the ownership of land and the pursuit of commerce, the former mainly resulting from successful conquest and the latter not always easy to distinguish from piracy. The modern system of production therefore was founded in a society already sharply divided into social

classes. Some of the dividing lines were blurred by the impact of new methods and the new men they brought to the top, and in this sense it is true to say that economic life grew more competitive. But in another sense it is equally true to say that it became more monopolistic. The older system had depended upon the virtual monopoly of land ownership in the hands of a ruling class for the concentration of income into a relatively few hands; the peasant had to take land on the terms offered to him, but the handicraftsman, owning his own primitive equipment for the most part, was a freer agent except insofar as he had to stand up to the greater bargaining power of the merchant. His income was low, because his productivity was low, not because he was directly exploited. With the introduction of machinery, however, his bargaining position changed; he could not compete with the product of the machine, and the ownership of machinery was a monopoly of those who already possessed the capital necessary to instal it. From this angle one can describe the industrial revolution as an extension of the field of monopoly from the possession of land to the possession of machinery. The product of the worker increased, and much of the increase was obviously due to the greater efficiency of the new machines, but as the bargaining position of the wage earner was worse than that of the craftsman, it is very doubtful if, for a very long time, the worker got enough of the increased output to improve his standard of living much.

One other characteristic of the historical background of modern economic life must here be mentioned: the role played by the State in economic development. (This will again be taken up, and more fully developed, in the last chapter.) This has been twofold. As, with the development of large concentrations of capital under unified control, economic groups within the State grew in power,

pressure was brought to bear upon the State to favour the interests concerned. For example, the formative period of the modern system in England was marked by a struggle between the strongly-entrenched landowners of the older regime, who wished protective duties on corn to continue, and the leaders of British industry, who at the time led the world also, and consequently wished for the utmost possible extension of free trade in order to make the most of their advantages. Similarly, in both Germany and the U.S.A. the modern industrial system was built up behind protective tariffs and aided by state enterprises in the field of transport. With the later growth in the power of organised labour the state has in many countries come to finance social services and provision against unemployment. This is the first aspect, the use of the state as part of the machinery of competition by powerful groups within it; no picture of contemporary economic life is complete without reference to this fact. The second is the manner in which the state has had to enter the economic field in the role of co-ordinator, in order to overcome certain of the more unstable elements in a completely free economy. The best example of this is the way in which the state in every modern country has had to undertake the regulation of its banking system, in order to prevent the danger of extremes of inflation and deflation. Similarly of recent years most states have had to concern themselves with the recurring problem of unemployment, and to formulate measures to deal with it. These two aspects of state action cannot be separated in practice; central banks are susceptible to group pressure, and unemployment policy usually depends for the vigour with which it is pursued upon the power of organised labour. But logically the two types of state action are distinct, the one relating to the interests of groups and the other to the well-being and stability of the whole.

To summarise, therefore, the following characteristics of contemporary economic life in Europe and America must find a place in any realistic description and explanation of its working.

First, it is a dynamic and expanding system, depending upon a mass of specialised productive equipment as its physical foundation.

Second, it is a monetary system.

Third, it was founded on economic and social inequality, as distinct from the inevitable individual personal inequality in ability and character of individuals.

Fourth, the part played by the state within it is not, and never has been, neutral.

¶ How DOES IT, in fact, operate? A capitalist society is above all a monetary society; within it goods are exchanged for money and money for goods. Moreover it is a society in which although production is in fact co-operative the means of production are in separate, private hands. Nothing can be produced in any society except by human labour working upon the resources of nature. To pick berries, to grow corn, to mine coal or bore for oil, to grind and bake the corn when grown, to build trains and operate them to distribute the bread; in all these processes labour is being used to transform in shape or change in locality some basic material derived from the soil. Each man in a capitalist society owns his own labour and has a legal right to sell it or use it as he sees fit.

Some men own the land and the resources of nature, which can only legally be used if they give their consent. Before production can take place, the means of production must be hired for money. Essentially the capitalist is the man who possesses money or controls its use, who hires the means of production to produce goods which will then be his property and which he will sell for money. The

people to whom the capitalist sells the goods which he produces are the landlords and workers, to whom he pays money for the use of their land and labour, and his fellow-capitalists who buy each others' goods for their own consumption. For a general outline the distinction between landlords and workers is not at this stage important. The essential distinction is between the employers and the employees; the former buy productive services from the latter, using them to produce goods which they sell back to employees and to each other. A self-contained capitalist society is one in which the employers produce goods which they can *only* sell to the employees in that society and to their fellow employers, and in which there is nothing on which the employees of all the firms in that society can spend their earnings except the goods produced and offered for sale by the employers. Thus there is a continuous circular flow of wages paid out, goods produced, goods sold to wage-earners and capitalists, and money returning to employers. None of the money is spent on goods produced elsewhere; no goods from outside come in. This is true of the whole trading system of the capitalist world—to-day of all the world outside the Soviet Union and the still isolated patches of primitive economy in backward parts of the world. But this trading circle is not always of the same size; in boom it expands, both increasing the amount of capital equipment contained within the system and extending the system to bring in people in the "western" world who were previously unemployed, and to include new areas of the previously primitive economy. In depression it contracts, thrusting workers and bankrupt capitalists outside into unemployment.

¶ It is AT this stage necessary to digress slightly, in order to explain more fully the nature of money and the working of monetary institutions like commercial and central banks. Money is anything which

is universally acceptable in payment for debts or in return for goods and services. The capitalist sells goods for money not because he wants money as such, but because he wants to be able to purchase labour and material in order to continue production, and it is only with money that he can do this. (As was seen in the last chapter, he will want to keep *some* of his wealth permanently in the form of money to guard against unforeseen emergencies. But in general he will want money not only because he *can* spend it, but in order to spend it promptly.) The money of the early days of the capitalist system was gold and silver coin. The precious metals are obviously suitable as money; they last, they are easy to count and transport, and they are universally acceptable. Very early in the development of capitalism, however, banks came into operation and augmented the supply of metallic money by the economies in its use which they introduced. The banking system in England had two foundations. In London it became habitual during the political troubles of the seventeenth century to entrust gold coins to the goldsmiths for safe-keeping in their strong-rooms. Once the custom became established, it soon became obvious to the goldsmiths that they could lend money, or rather paper promises to pay money on demand, all the time that they had enough in the safe to cover any demand which was likely to be made for cash *at any one time*. If they knew from experience that for every £100 which they owed, either to persons who had deposited coin with them or to whom they had issued drafts upon themselves, they would never be asked for more than £10 on any one day, this would become what is now known as the "cash ratio", the ratio of cash in the till to money due by the banker to his customers. In much the same way merchants whose business made their name known over a wide countryside found out that when they were asked to advance money

to smaller capitalists desirous of expanding their business they could issue "promises to pay", only some of which would in fact be presented to them for payment. The rest would remain in circulation, being treated as if they were money by those who knew and trusted them. Essentially the two operations were the same, the goldsmiths laying the foundation of the cheque and deposit type of banking now common among commercial banks, the merchants inaugurating the modern banknote, the issue of which is now the sole prerogative of the "central bank" in most modern states. One thing was essential for the smooth working of the banking system from its earliest stages. All the banking institutions had to work to the same cash ratio. The reason for this is that no bank ever holds either a cheque drawn on another bank or a note issued by another bank. When these come into their possession they are instantly presented for payment; otherwise the bank which holds the "promise" of another without presenting it is, in effect, lending money to the other without interest—and moreover money which it could itself lend out at interest once it had been brought home. So, as banks are always getting each others' "promises" paid into them and cashing them, if all "keep in step" the sum of daily claims in and out from other banks just balance. But if one bank is lending more freely than the rest it will presently find that more of its "promises" are passing into the hands of other banks than it is getting of theirs; it will run the grave risk therefore of losing all its cash reserve and thus being forced into bankruptcy. If all keep in step, however, a total of bank money can be kept in being equal to the legal tender held by the banks multiplied by the cash ratio to which they all work.

To review the working of a banking system, then, it is clear that what the institution of banking does is to allow the same stock of money at the same time to act as the

savings of those who deposit it (on the assumption that not everyone will want their deposits back at the same time) and to provide circulating capital for commerce. No banking system will work if depositors all want their money back at once. Herein, as will be seen, lies the root of much banking legislation. And as money has been defined (above) as "anything which is universally acceptable" it is clear that the effect of a banking system is to increase the supply of effective money. Cheques and notes *are* money if they are generally accepted as such. It can now be seen how intimately the growth of capitalism is integrated with the development of banking. If the early capitalist developments, enlarging as they did the circle of monetary relationships, had not been accompanied by the growth in the supply of effective money provided by the beginnings of banking, the increased demand for the existing stock of gold and silver would have caused the money prices of goods to fall, thus choking off further development. Had banking been developed in advance of the expansion of capitalist production, the increased supply of money relative to the unchanged number of monetary transactions would have forced up prices in an inflationary manner. (A premature attempt to introduce the contemporary British banking technique into France, which was then economically less developed, had indeed just this effect.) The two developments could only have taken place, as they did, side by side. The early banking system was, however, extremely unstable. As was explained in Chapter Two the demand for money by businessmen is not only derived from current business activity, but from the desire to hold money, or exchange money for stocks of goods for speculative purposes. It has been shown above that if banks keep in step there is nothing to prevent them from increasing or decreasing the supply of effective money based on any stock of legal

tender money. If the business world is optimistic, and expects prices to rise, it will want to hold goods and not money, will try to buy without selling and thus force prices up. If in these circumstances the last word in the control of monetary policy is with commercial banks whose only motive is the pursuit of profit tempered by prudence, they will also be trying to share in the anticipated prosperity by lending freely. The effect will thus be cumulatively inflationary.

In the case of general pessimism, the reverse will be the case. They will tend to contract credit, in order to save their cash reserves, at a time when only an increase in the supply of effective money could offset the fall in prices resulting from the effects of the business world to sell without buying. The effect will be cumulative deflation, and heavy unemployment. Add to this the obvious fact that no modern state can allow its banking system as a whole to become bankrupt, because of the wholesale collapse which would follow, and it is clear why in all modern states a non-profitmaking *central bank* limits the supply of legal tender money, and why either law or custom fixes the cash ratios to which commercial banks work, thus ensuring central bank control over the quantity of effective money, i.e. legal tender plus bank credit.

This may be illustrated by describing current British practice. The Bank of England is able, under current legislation, to adjust the amount of legal tender money in circulation, and has for long possessed the power to regulate the volume of lending by the banks. The basis of this power rests, first, on the nature of banking business, second, on the habit of the commercial banks (Lloyd's, Barclay's, etc.) of keeping their main body of reserves with the Bank of England.

Banks earn their income by accepting deposits from the

public at a low rate of interest, and lending most of what is deposited with them to the business community or the government. Their profits depend on the difference between what they pay as interest on all the deposits (except on current accounts, on which interest is seldom paid) and what they charge for loans or earn on securities in which they have invested. But they must keep some of their assets liquid, either in the form of money in the till or of reserves with the Bank of England, because depositors are entitled to withdraw their money as they need it, and provision must be made for the chance that heavy withdrawals may take place at a rate exceeding that at which the loans in which the bank has invested the depositors' money will be repaid, or the securities which it has bought can be resold without loss. These reserves earn no interest (the Bank of England does not pay interest on bankers' deposits) so they are kept at a steady proportion of some 9% of the total assets of the banks, which custom has established as safe and "reputable". In other countries, for example the U.S.A., the cash ratio of the commercial banks is fixed by law.

Thus, if the Bank of England wants to put more money into circulation, it alters the cash reserve of the banks. This is done by the Bank of England buying securities, i.e. War Loan or Consols, and paying for them by cheques drawn on itself. The persons or institutions from which the Bank has bought pay these cheques into their own banks. The banks treat cheques drawn on the Bank as cash, paying them into their deposit there. Thus the liabilities of the banks, on which they have to pay interest, are increased, and so is their store of "cash" on which they get no interest. So they have to lend some of the cash, or buy securities with it, in order to maintain their profits. This puts money into circulation and reduces the rate of interest in two ways: first, because the banks in order to

lend more have to charge lower rates or accept riskier loans at the rates previously charged on safe ones; second, because the buying pressure on securities will drive up their price, thus reducing the rate of interest.

¶ TO RETURN TO the previous argument: the capitalist employer uses money to buy materials (from other capitalists) and hire factors of production, in order to produce goods which he intends to sell again for more money. The incentive to production is to make profits, to receive a surplus from the sale of the goods produced over and above the sums paid out in hiring the factors of production. This surplus is the income and the only source of income of the employer. The employer must plan his production in advance. He estimates what the price of his goods will be when the time comes to sell them, or more exactly what the market conditions will then be, and the different amounts which he can realise if he charges one price or another. He considers also the capacity of his works, and the way in which costs of production will vary as he alters the rate of output at which he aims. The cost of production per unit of output will depend very largely on whether the factory is running below capacity, or at the output for which it was planned, or whether capacity is being overtaxed. Thus he can guess fairly clearly what the cost of producing various outputs will be at the ruling rate of wages and raw material prices, or at the rates which he expects to rule during the period for which he is making his estimates. He compares the two sets of estimates; what he thinks he can sell at what prices, what he thinks he can produce at what cost. Finally he will decide upon that plan of production and sales and price policy which he thinks will give him the largest total surplus over the cost of production. In laying out and pursuing his plan of production the employer will determine the incomes he is going to pay out to other

people during the period, and he will pay out these incomes in expectation of making an income of fairly definite dimensions for himself. All the employers will similarly and simultaneously be acting in this way. The total incomes of employees will be the sum of the amounts paid out by the employers. The latter are all acting in the expectation of deriving incomes from the sale of their products in excess of what they have paid out. The employees' incomes are fixed and determined by the employers' plans: the employers' incomes for the period are a matter of estimate and conjecture, of anticipation. Will these anticipations be realised?

The goods which all the employers produce must be sold to the people they all employ, and to each other. The total receipts of all the firms selling goods will be the total of what all the employees spend, plus the total spent by employers upon themselves during the same period. If all the workers spend all they earn on the goods which they have been employed to produce, and which was sold back to them by their employers, the employers will get back just what production has cost them in incomes paid out to other people and nothing more. There will be no surplus to provide the employer with an income. But if the employers buy things for themselves out of their expected income, then the total surplus gained by employers as a whole over their money costs of production will be equal to what they all spend on each others' goods. If they all spend as much as they expect their profits will be, then the excess of sales proceeds over costs of production will be just equal to what they thought it was going to be. If the workers spend all their wages, but the employers do not spend all their anticipated profits, then the total surplus will be less than they thought it was going to be. If all the employers are reckless and spend more than they expect to make, incurring heavy over-

drafts at their banks, then they will all be pleasantly surprised at having made bigger profits than they had anticipated—equal, as a whole, to what they have spent.

An example will perhaps clarify the argument. If there are five firms, each employing so many men that its wages bill is £1,000, then the total wage bill will be £5,000; assume that each employer embarks upon this expenditure on the assumption that he is going to make £200. Thus the total anticipated sales proceeds will be £6,000. The workers' incomes provide a demand of £5,000, but if the employers each only spend £100 out of the £200 he expected to make, then the total demand for the product *can* only be £5,500, and they will make on the average only half the profit which they hoped for. This simple analogy is basic to understanding the forces which determine the state of employment and the expansion or contraction of a capitalist society. If employers on the average make just the level of profit in expectation of which they planned production, then they will be confirmed in their judgement, and production will continue at that level, provided that nothing takes place to alter their estimate of demand, or their judgement concerning future costs. If they do not make as big a surplus as they expected, and if there seem to be no forces making for a change in demand or in costs, they will conclude that they have misjudged the market situation, and will reduce the numbers they plan to employ and their own estimates of future profit. The tempo of economic life will slow down, and activity will contract. If their receipts in excess of cost are more than they anticipated, they will conclude that trade is better, and most probably decide to expand employment and production and to budget for bigger profits. The whole economy will expand.

¶ OF COURSE THE sums spent by the workers

may not be just exactly equal to the incomes which have been paid to them. They may spend more than they have earned if they decide to draw upon past savings, or they may spend less if they are saving out of current income. If the former is the case then their excess spending may make up the difference between what the employers expect to make in profits and what they decide to spend, and thus maintain production at a stable level.

The case in which workers spend more than they earn however is an unusual one, normally to be found only at the end of a period like a war, during which people were earning large sums which they could not spend for the moment. It is much less usual than circumstances in which they are spending less than they earn because they are adding to their savings. And it is only possible for the majority of people to go on spending more than they earn for a very short time, until savings run out. In a society in which the well-being of the normal man depends upon his capacity to work, the need to save against temporary incapacity to work is an urgent one; old age and the unforeseen also demand provision. Therefore in normal times it is probable that, taking the incomes of employees altogether, less will tend to be spent upon current production than total earnings. Employers too will, as a general rule, spend less than they expect to make. They will save for the same personal reasons; they will also wish to save to expand the business, to enlarge their income-earning capacity in the future, and also because they will wish to see the business they control growing under their management for the sheer joy of achievement. Thus they would probably spend less than they expected to make even if their income was absolutely certain. But what they expect to make is always only a matter of conjecture, not a fixed sum. Thus to be on the safe side they will tend to budget for spending a little less than their anticipated

profits. For one reason or another it is probable that the workers will normally spend less than the whole of their wages, and the employers less than their anticipated profits. For one reason or another they will save, and so long as they save, the total receipts of industry *must* be less than the employers anticipated.

So long as workers refuse to spend the whole of their earnings and employers refuse to spend the whole of their anticipated incomes, total receipts must fall short of employers' anticipations. Therefore the latter will revise their estimates downwards, cut down employment and production. Saving is a continuously depressing force in the capitalist society.

¶ SO FAR ONLY certain problems emerging from the monetary aspect of capitalist society have been considered. The time has now come to deal with the questions arising out of its utilisation of fixed equipment. The normal firm will possess a great deal of fixed and durable mechanical equipment, which has been bought at some time in the past. When he purchased it the employer expected to be able to recoup himself for its cost out of the receipts from the sale of the goods which would be produced with its help during its working life. Thus the surplus of receipts over current expenditure is not all income available for the employer to spend, as has hitherto been assumed. Before the employer can realise an income for himself he must recoup himself for the cost of the equipment, which he has paid out in the past. From the expected surplus of receipts over current payments he will deduct a sum to cover part of the cost of the machinery, proportional to the extent to which the machinery has been "used up" or exhausted by the work of the period. This sum when realised will be put in a "depreciation fund", and thus the owner will preserve his capital intact. If he spent the whole gross surplus and did not provide

for depreciation, he would be eating up his capital; when the existing machinery was worn out he would have no funds with which to replace it.

Thus even if employers were prepared to spend the whole of their current *net incomes* up to the hilt, they would not plan to spend the whole of the excess of *receipts over current wages payments*. Part of the receipts would have to be put aside in order to replace equipment as it wore out. Thus, even if there is no net saving, the amount spent by employers and employees together will always be less than the total income expected by employers. Current receipts may thus be divided into three parts: that which reimburses the employer for current wage costs, that which reimburses him for past costs (depreciation), and that which provides him with an income. Wages, and employers' incomes, are generated out of current production, but although depreciation is a current cost no current income has been generated which will provide receipts out of which to meet it.

When however, in the past, the capital equipment was constructed, incomes both for employers and employees were created in the process. What would be the result if similar equipment, somewhere else in the economic system, were being created to-day? Always while some firms are making consumers' goods, others are making tools and equipment to sell to other firms, which wish to replace old equipment or to expand, or to new firms starting up in business. The workers employed in making, e.g. railway engines, do not spend their wages in buying railway engines, though they may spend part of them on rides on the railway. Thus the incomes generated by the production of equipment are available for the purchase of consumers' goods, together with the wages paid out by the consumers' goods firms, plus the amounts which the employers in both types of industry spend out of what they

expect to make in profits. Thus the income generated by the *current* production of new equipment must be added to the total receipts of firms using equipment to make consumers' goods and, if they are large enough, will enable them to meet their depreciation charges. In the same way, if the level of new capital construction is high enough, it can offset saving, and thus allow the estimates of entrepreneurs to be realised in spite of both saving and depreciation charges. Or, if it is intensive enough, it can cause all entrepreneurs' anticipations to be exceeded, and thus stimulate a general expansion.

¶ ORDERS FOR EQUIPMENT will come either from firms replacing old machinery, which has covered its depreciation, or from firms intending to expand production, or from new firms setting up new factories. Existing firms will replace out-worn equipment if they expect that the value of its product over its anticipated life will exceed the cost of acquiring it and paying interest on the money thus immobilised, and thus provide them with a satisfactory surplus. In making the relevant calculations the purchase price of the plant and the current rate of interest must be compared with the expected prices of its products over the whole of its anticipated life. The employer's ideas about future prices will be influenced by past experience. If prices have ruled at a certain level for some time, and there is no reason to suppose that the general level of income or employment is likely to change, it will be expected that prices in the future will be much as in the past. If at the present level the employer has covered his wage bill and his depreciation and made a profit which he considers satisfactory, he will seek to renew his plant and continue in production as before. If however receipts have been so low that depreciation has not been covered he will not renew his plant, unless he has good reason to expect things to improve; if in this case

he replaces his equipment he cannot do so out of the depreciation funds which are not there; he must decide to invest new capital in a business which has already lost one lot of equipment.

In general, firms will give renewal orders if their expectations have been realised. But for the whole society expectations *cannot* have been realised unless someone has been giving orders for equipment, and thus offsetting the downdrag of savings and the accumulation of depreciation funds. No firm, however, will order equipment unless its expectations have been realised already, and the orders for new plant must come *first*. Thus it appears that the group of firms which, as going concerns, make up capitalist society cannot at any given moment maintain itself in profitable operation by the action of members of the group. This is a very different picture from that of the last chapter, but given the nature of the contemporary world of economic affairs it is difficult to resist the conclusion that any kind of equilibrium in capitalist society can only be accidental, resulting from the level at which *new* investment is for the time being proceeding. That being so, it is necessary to investigate the circumstances determining the level of *new* investment.

¶ ALTHOUGH IT is improbable that all firms taken together will earn enough to cover depreciation and earn a surplus unless orders are given for new equipment first, it may happen that some firms are more than realising their expectations while others are not. If the total receipts of *each firm* were just equal to their wage bill and the amounts the owners spent on themselves, then each would cover wages and show some surplus, depending on the amount of current saving, but could not meet depreciation charges. But there is no reason why the population in general should spend their incomes between the products of different firms in the same proportion as

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the payments made by those firms contributing towards the creation of total income. Of two firms, each paying out incomes of £100 per week, the receipts of the one may be £130 and the other £70. In this case the former will probably be more than covering depreciation and expected profit at the expense of the latter, which may or may not be in the same trade. Firms in this situation will renew their equipment promptly when it wears out, and will probably seek to expand it, even if the general economic conditions are those of deep depression. New firms which are entering the market with new equipment hope always to be in this position, to draw more out of the pool of purchasing power in receipts than they pay out in costs. Normally they either intend to produce a new commodity or, if they are entering into competition with older firms in an established trade, they intend to utilise some new or undeveloped technique or device which they estimate will enable them to make profits at prices which would bankrupt those already in the trade but using older methods. This is the primary stimulus to the acquisition of new capital goods, and constitutes the force which carries the economy out of depression into boom.

Entrepreneurs are constantly seeking to exploit new discoveries, either in the technique of production or in the tastes of consumers. Consequently, over and above the reinvestment of depreciation funds which merely keep the stock of capital intact, *new* capital is, except for the very worst periods of depression, always being invested. The reason why new capital goods are called into being is the estimates of entrepreneurs concerning their profitability in operation. (Remember *all* economic activity is based on estimates of the future, even such "negative" activity as deciding not to do anything or even to go out of business.) Allowing for risk, as such calculations do,

there is always collectively present in the minds of the business community a series of estimates of the net rate of return to be anticipated from greater or lesser additions to the equipment of their businesses. This means that there is at any time a demand schedule for the output of the capital goods industries, exhibiting a willingness on the part of entrepreneurs to buy more equipment as the cost of installing it falls. The effect is closely similar to that of the demand for consumers' goods; the latter is based on declining marginal utility: the former on the declining marginal efficiency of capital, i.e., on estimates of the profitability of new investment which inevitably decline (vide the law of varying proportions) as the quantity of prospective investment increases. New inventions, changes in taste, the growth of population, introduce new and higher schedules of the marginal efficiency of capital; each schedule however, representing the conditions of the day, will show a decline in the amount of profit to be expected from each new investment as accumulation proceeds. But these schedules are estimates, based upon such factual evidence as technical innovations or statistics of consumption; the interpretation of the data will alter with changes in the general "mood" of investors, which may well be based on political or other factors. It is, however, upon such estimates of the marginal efficiency of capital, the additional profits resulting from new investment, that the demand for new capital goods depends.

Thus changes in the prices of capital equipment will also affect the level of investment: rising prices will discourage, falling prices encourage it.

At this stage it is necessary to return again to the monetary system: it has been shown how the central bank of a modern economy can alter the supply of money, and it has been stated, without full explanation, how this can

alter the rate of interest. An explanation is due at this stage, because what the capitalist in doubt whether or not to buy a piece of equipment is interested in is what it will yield him over and above the ruling rate of interest.

The ruling rate of interest, the rate at which entrepreneurs will have to borrow to purchase equipment, or which they will have to forego if they use their own money, will clearly have an effect upon investment. If the rate of interest is 5%, then any new investments which do not promise just a little more than 5%, allowing for risk, are out of the picture. But if the rate falls to 2%, obviously a lot more will be possible. Allowing then for the factor of interest one can say that the *net* marginal efficiency of capital, the return over and above the ruling rate of interest which new capital equipment is expected to produce, is the determinant of investment. Given the marginal efficiency of capital, the rate of interest determines the level of investment. What determines the rate of interest? Interest is paid for the loan of money. At any given time all the money belongs to someone or another. Why should they want to hold it, be reluctant to lend it and have to be paid before they will surrender control? It has sometimes been said that the value of money is dependent solely on what it will buy, and that it has no value of its own. This is not so; money, as has been shown, has one unique quality, that of liquidity, of being wealth in a completely fluid form. That is why everybody wants to hold some of their wealth in money, in just the same way as they hold some of it in the form of food and some in clothes. One does not spend all one's money, because of the need to have some liquid resources. The demand for liquidity, for money as such, is like the demand for any other commodity. It shows declining marginal utility as its quantity increases. One holds a stock of money, whether it be a few shillings in the pocket

against personal emergency or the millions held in reserve by a bank, because one values the marginal utility of the convenience which liquidity gives over that of the marginal utility of increased consumption, or of the increased income which would result from lending it at the current rate of interest. If one gets more money, one either spends or lends it, and the pressure of a general increase in the willingness to lend will reduce the rate of interest. If the rate of interest goes up, one is more willing to lend. If estimates of the utility of liquidity, or "liquidity preference" go up for any reason, then one is less willing to lend or spend. Thus the rate of interest depends on the quantity of money on the one hand and upon *liquidity preference* on the other. Suppose liquidity preference goes up because, for example, general economic uncertainty makes businessmen want to hold a greater command over resources in general in a liquid form. (This is normal when a depression starts.) Everyone wants to hold more money; but all the money already belongs to someone. Thus interest rates go up, because of a general anxiety to borrow and unwillingness to lend, and prices fall because everyone tries to augment his stock of money by selling more than he buys. As prices fall, the value of money rises, and the rise continues until the amount of goods which the existing stock of money will command is equal to the amount of resources in general over which society wishes to hold command in a liquid form. One of the prices which would have come down in such circumstances would have been the price of fixed-interest bearing securities, like War Loan, which would have been subjected to the general selling pressure. Now if the market price of a security paying $2\frac{1}{2}\%$ comes down from a nominal value of £100 to £50, it follows that the rate of interest which an entrepreneur must pay to finance new investment must have risen at least to 5% , because he

would have to outbid the attractiveness of the gilt-edged security to lenders who were sure of an assured £2 10s. od. on their loan of £50 when the security was that price.

Thus the rate of interest depends on two factors: liquidity preference and the quantity of money. Given the quantity of money, liquidity preference determines the rate of interest: given liquidity preference, the quantity of money determines it. Now liquidity preference is as subject to the moods of the market as are estimates of the marginal efficiency of capital, and is as uncontrollable, but changes in the quantity of money, which can offset and even outweigh changes in liquidity preference, can easily be affected through the medium of the banking system, as has been seen.

While it was necessary to bring this factor into consideration in discussing the demand for new equipment, however, it would be unwise to place too much emphasis upon it. The reason is that the calculations surrounding the purchase of capital goods have usually to carry estimates pretty far into the future, and thus the element of uncertainty involved is much too large in most cases for a change in the rate of interest, unless it be very large, to alter the decisions of the potential investor. Indeed it is probable that small changes in interest rates do little to cause businessmen to extend or contract along a range of considered possible investments. On the other hand large changes, especially in the upward direction, may cause them to alter their plans altogether, being taken as evidence of a general change in the climate of the business world. The rate of interest can always be used to stop an inflationary boom, but always at the risk of starting a depression, which may be much harder to terminate.

¶ IF THE CAPITALIST society is in a state of depression, with firms in general not earning enough to

cover their depreciation charges and therefore progressively revising their production plans downwards, what will be the machinery of change when the tide turns as a result of some group of businessmen placing orders for capital equipment? First, the demand for consumers' goods will rise; both the workers spending their wages and the businessmen spending out of their anticipated profits will buy consumers' goods and not the capital equipment which they earn their living by producing. Neither will spend all they earn; the workers will save for personal emergency and the employers will withhold part of their anticipated incomes as security against the general uncertainty of business and, of course, some in order to provide depreciation funds. But the rest of the new income will go to increase the receipts of the manufacturers of consumers' goods, and enable a larger proportion of those than previously to cover depreciation and make net profit. They will consequently revise their production plans upwards: in some cases where capacity was previously under-employed output will expand; in other cases where no immediate expansion of output from existing plant is possible, prices will rise. In both cases new incomes will be generated: in the former this will mainly consist of the wages paid to the workers recalled to employment, a lesser proportion going to employers; in the latter, nearly all will go to employers. Therefore it is probable that in the first case less of the new income will be saved than in the latter, but in both cases some will be saved and some spent. This will not be the end of the expansion, however, for two reasons. First, the new incomes earned by the people in the consumers' goods trade will have resulted from the demands of the people in the capital goods trades: workers in the consumers' goods trades will need consumers' goods on which to spend that proportion of their money which they do not save, because the goods

which they earned their income by producing are being consumed by the machine-makers. Second, those consumers' goods firms which find that the limitations of their plant preclude them from expanding output will seek in their turn to purchase new equipment, and will start another wave of expansion.

To get the logic of this problem straight it is not necessary to go in detail into the latter case, because the process of expansion will be the same when it occurs. How far will any expansion generated by the production of a definite quantity of new capital goods go? The answer lies in the extent to which the receivers of income wish to save.

Suppose for a moment there were no saving, not even for the purpose of covering depreciation, and that all the income paid out by businessmen, and the whole of anticipated surpluses, were spent as they were received. If, in such circumstances, a single order for £100 worth of equipment was placed with an engineering firm, the whole unemployment problem could be solved. The £100 received by the workers and employers in the firm would all be spent on consumers' goods, thus generating £100 of new income in those trades, but not leaving any of the goods produced on the market for the new income of their makers to buy. Thus another £100 of income would be generated, and so on.

Such, as has been seen, is not the case. The engineers, employers and employed together, would probably save some £10, thus passing on £90 in demand for new consumers' goods. Of the £90 thus received by people in the consumption industries, if the same ratio of saving was current there, £9 would be saved, passing on £81 in new incomes. The process of expansion would go on, successively damped down by the same proportion of saving, until the sum of the new incomes generated at each round

equalled £900, and the new saving equalled £100. The ratio of expansion would be the *inverse* of the ratio saved. It was shown above that if the ratio of saving was 0, then expansion would be infinite; it will be equally clear from a moment's reflection that if the ratio of saving was 100%, expansion would be zero! And if half the new income was saved, then the final level of income would not exceed double the income earned by the firm producing the new equipment.

This conclusion brings to light an interesting point. The amount of new saving has proved to be exactly equal to the amount of the new *investment*, or purchase of capital equipment. Expansion went on until the total saved equalled the total earned in the engineering firm in question, and it stopped there, because if any further expansion of production of consumers' goods had then taken place, and the customary 10% of the income thus created had been saved, neither anticipated surpluses nor depreciation funds would have been covered; the firms involved would thus have again revised their plans, this time downwards, and the position where new incomes were running at a level at which current savings were equal to current investment would have been restored. If this is true of the *new* incomes resulting from a specific act of *investment* (henceforward this term will be used to cover the production of new capital equipment) it must be true of the whole system.

The amount saved must be equal to the amount of money earned in the industries producing equipment. Saving, including the provision of depreciation funds, must be equal to the value of investment. To make this point clear it is necessary to return to the point made in Chapter One, when it was stated that from the point of view of society as a whole, saving *cannot* take place without investment. Society cannot collectively "save" without

embodying the saving in some concrete form: some *thing* must be saved, because merely to abstain from using labour and productive capacity for making consumers' goods without putting them to work at adding to stocks of materials or equipment is not saving, but waste.

Earlier passages in this chapter show how saving, defined as the non-spending of income received or reasonably anticipated, must pull down production by lessening the purchasing power available.

The two arguments are not incompatible. Savings *plans*, the intention of individuals to save, can always add up, looking forwards, to much more than the plans for investment which businessmen are simultaneously making. But the essential pre-requisite for saving is to have an income out of which to save. Income can only be earned by making consumers' goods (including services) and capital goods. If society tries to save, i.e. to withhold income from the purchase of consumers' goods more than the value of current investment, then the potential income of the people thus thrown out of work will be lost, and their plans for saving will come to nothing. The total income will fall to the level at which what people want to save is equal to what is currently being earned by producing investment or capital goods. Any attempt to save more than this total will merely destroy other people's capacity to save by destroying their incomes. Thus *realised* savings, as distinct from savings *plans*, cannot be more (or less) than the value of current investment.

¶ GIVEN THE AVERAGE proportion of income saved therefore, the results of a single new investment are quite definite. But, as was stated at the commencement of the previous section, such an act is likely to stimulate new investment. How far is this development likely to go? As successive increases in the activity of the capital goods trades take place, the total

national income will rise, as a result of the increased demand for consumers' goods. Wages incomes will rise, but as pressure upon existing plant commences to force prices up, the incomes, expectant and realised, of the businessmen will almost certainly rise faster. For several reasons it is safe to predict that as total income increases, an increasing total and, still more important, an increasing *proportion*, will be saved. This is what one might expect on purely theoretical grounds. To quote Lord Keynes, "The fundamental psychological law, upon which we are entitled to depend with great confidence both *a priori* from our knowledge of human nature and from the detailed facts of experience, is that men are disposed as a rule and on the average to increase their consumption as their income increases, but not by as much as the increase in their income."

Income receivers have the choice between buying consumers' goods or adding to their "wealth", here defined as "retained income". As the scale of purchase of consumers' goods increases their marginal utility inevitably declines. Given a sufficiently large supply, the marginal utility of any single consumers' good falls to zero and may then even become negative. An increasing aggregate of consumers' goods exhibits the same tendency as each of its component parts. Moreover, as the aggregate increases in complexity, the capacity of the consumer for mere attention, let alone enjoyment, becomes exhausted. Much confusion has been caused to students commencing the study of economics by the frequently encountered textbook statement that "human wants are unlimited", which appears to confuse the aspirations of the race with those decisions of the individual which underlie economic conduct. Manifestly, human wants in the form of demand for consumers' goods are limited by time and capacity, as even the most degenerate of the Roman Emperors must

have found, though few individuals ever reach that stage.

Can the marginal utility of increments of "wealth" also be envisaged as inevitably declining to zero as accumulation proceeds? Clearly it can, insofar as accumulation takes the form of the purchase of assets which demand management. But accumulation can also take an absolutely liquid form, or a form in which the purest of liquidity only is sacrificed, i.e. an account with a bank, or a gilt-edged security. Obviously it will, in fact, take this form before the difficulties of risk bearing and administration discourage investment so much that it comes to an end. Is there any reason why the accumulation of assets involving the absolute minimum of risk and responsibility should reduce their marginal utility to zero? If this cannot be established, then it follows that any proportionate increase in the holding of wealth, compared with a proportionately equal increase in the rate of consumption of consumers' goods, will exhibit a lesser decline in marginal utility.

There seems to be no reason why the accumulation of wealth should ever come to a voluntary conclusion. As accumulation proceeds as an alternative to consumption no effort is needed, no action performed, and no responsibility involved in order to enjoy the diffused sense of power created by functionless ownership.

Examination of the organisation of any modern country, for example, Great Britain, seems to indicate that the most stable single factor in our economic set-up is this propensity. When the national income *increases*, the *proportion* which is saved goes up; when it falls, as in depression, the proportion saved falls. When the level of income is very low indeed, as in 1932, the proportion saved is very small indeed. The reasons are based on our most fundamental institutions. As the national income fluctuates it is profit incomes which rise and fall most and it is

these incomes out of which most saving is done. But most saving is done not by individuals, but by limited companies, which put money to reserve in good years, and not in bad. Even the puny savings of the working classes grow in years of prosperity and are spent in years of depression. The unemployment insurance fund builds up reserves, i.e. puts money away in good years, and "spends" in bad. So it seems to be quite certain, while the social structure and the distribution of the national income between individuals remains roughly as it is, that a large income (full employment) means a lot of saving. But a lot of saving means a lot of investment: if income is diverted from expenditure upon consumers' goods, and not put back into circulation again via the purchase of capital goods, the result will be unemployment in the consumers' goods trades and a fall in the national income down to the level where what people want to save is equal to what is currently being invested in capital goods. Given the propensity to save, then the amount of current investment determines the level of employment, the size of the national income, and the amount which will be saved, which depends directly on the size of the national income. If the propensity to save *increases*, i.e. if at any level of the national income people try to save a larger amount than before, then to "hold" any level of employment there must be more investment. Should the reverse take place, then for any volume of investment there will be a higher level of employment.

The tendency for saving to grow faster than income when the latter is rising indicates that it will take an increasing amount of investment to stimulate each successive increase. It explains also why depression seems always to stop short of complete economic breakdown: as income declines, saving declines *faster*, and almost certainly a point will be reached at which society is too poor to

attempt any *net* saving. Those businessmen who are covering their depreciation funds will indeed be saving, but others, particularly institutions like the unemployment insurance fund, will be "dis-saving", and once the level of zero net saving has been reached the decline will stop, because total consumers' outlay will then equal total wage payments, plus depreciation, plus expected profits. Thus a downward limit is set to the process of contraction. The tendency for the proportion saved to increase more than proportionately to income as activity expands, however, only slows down the opposite process of expansion and does not set an upward limit to it, like the downward limit to depression. Why does expansion come to an end?

The cessation of expansion is due to investment ceasing to increase in volume, and the depression into which a society which has been expanding normally overbalances when the expansion stops is due to its subsequent curtailment. The simplest approach to the problem is first of all to examine what happens when the production of a piece of capital equipment comes to an end, reserving for further investigation the reasons for which the general level of investment may slow down. In the nature of things the building of a new factory or sinking of a new mine must come to an end. As the amount of equipment necessary to lay down a new plant gets bigger and bigger with technical progress, the inevitable discontinuity of capital production increases: each individual "job" tends to have a greater effect on the general economic situation. All the time that construction is taking place, the incomes created will offset saving and depreciation, thus keeping the general trend of income at a higher level than would otherwise be the case. When the plant is finished, these incomes come to an end: the plant is set to work, and the number of men initially employed to operate it may be greater than those dismissed from construction. But their

wages, and the expected profits of the capitalist, and the depreciation fund on the new capital, must all be covered out of the sales of the product. The saving of workers and employers, and the sums put into depreciation funds will all have a contracting effect, just at the time when the wages and profits arising out of construction, which had an expansory effect, come to an end. And the consumers' goods now placed upon the market will have to find purchasers; they constitute a net addition to supplies.

Clearly, therefore, unless by accident a new piece of capital construction of at least equal size to the one just completed is started up, some group of businessmen are going to fail to make their expected profits or to earn their depreciation. This may be the owners of the new plant, or their competitors; the effect may be felt in some other part of the economic field, but it is inevitable. Only if there are so many capital projects under way, all at different stages of completion and each of them so small in relation to the whole that the end of one will not constitute a serious "jerk", will the effect be avoided. Even if this is the case the total of capital construction will have to be *increasing*, producing a steadily growing income, in order to offset the growing total of sums put aside for depreciation as the total of established capital plant increases, and the increasing proportion of income saved for other reasons as income in general increases. This *may* happen in the early stage of a period of expansion. But the more construction jobs started at the same time, the greater becomes the probability that a lot of them will finish together.

Suppose the luck holds, and the expansion does not break down because of discontinuity. The reason for new investment is to make profit out of hitherto unexploited possibilities, either by manufacturing goods of a new kind, like television sets, or by utilising new inventions which

allow established goods to be produced more cheaply. The most profitable opportunities will be seized first: fairly soon in a period of rapid expansion these will all have been exploited, and those which remain will be less promising. The marginal efficiency of capital (the estimated rate of return on *new* capital equipment) will fall. If the rate of interest falls too, either as a result of central banking policy, or because the growing sense of security and expectation of rising prices normal in such a period lessens the demand for money more than the intensified demand for money due to multiplying transactions increases it, leading to a net fall in the demand for money, then investment can carry on. But there are limits to the extent to which interest charges can be reduced. The more rapid the rate of technical progress, the faster new and profitable fields of investment are being invested, the further the expansion can go.

At this point, however, a new factor intervenes. So far it has been assumed that there was unemployed labour waiting to be taken on at generally accepted wage rates as expansion proceeded. This is a reasonable assumption: the existence of a reserve labour army is normal in a capitalist society, and it is one of the characteristics which distinguishes it from the abstract theoretical model of the last chapter. Sooner or later, however, if expansion goes on, the labour supply will come to an end. Should this occur, one of two things must happen. The expansion may stop at exactly the point where "full employment" has been reached. If this takes place, and the production of capital equipment continues to take place at a level which just provides enough income to offset the savings which society will want to make when its income is that earned with full employment, then for the time being, in theory, the position is stable. But it must be remembered that all the time the supply of capital equipment will be

increasing. Therefore the *proportions* of the two factors, labour and capital, will be changing. The logic of the previous chapter can now be applied.

The stock of capital will be increasing: the supply of labour will not (unless population is growing very fast). Thus the marginal productivity of capital will fall, that of labour will rise. As the bargaining power of capital weakens and that of labour grows stronger, the rate of return to new investment will fall; unless capitalists are willing to accept a lower income and still go on investing, investment will again slow down, and thus the economy will overbalance into depression.

In practice however, before full employment (which needs a lot of definition) has been reached, the situation will have become dangerously inflationary. Shortages of specific types of labour will occur long before everyone has a job, and wages will start to rise. When this point is reached, investors will revise their plans, because of the lessened profitability of operating the plants they are planning with higher wage costs, and the depression will start as they abandon projects. (The problems arising out of implementing a full employment policy are among the most important of our time, and are discussed more fully in the last chapter.) Putting all the arguments of this section together, it will be clear that in a capitalist society it is very probable that the general level of activity will fluctuate up and down over a wide range, and improbable that except under the discipline of a war-time regime or a reforming government it will achieve and maintain anything like "full employment".

¶ IT MUST BE remembered, however, that it is through the operation of this spasmodically accumulated set of economic arrangements which one conveniently lumps together under the term "capitalism" that the enormous economic progress of the Western world in

the last two centuries has been brought about. Each expansion of production has been followed by a decline, but each subsequent advance has started off with a higher level of equipment, technique, and acquired productive skill than its predecessor. The standard of living of the masses has risen considerably, though unevenly and unsteadily. Consideration must therefore be given to the manner in which this has been brought about.

First, as has been shown, the stimulus to investment is either the production of a new commodity, or the installation of new plant which can produce something already in use more cheaply than before. While the new plant is being installed, it will stimulate "boom" conditions, as a result of which more plant, selected for the same reasons, may be installed. When the investment activity slows down, a general depression will spread; most firms, perhaps including the new ones, will fail to achieve their expected profits or even to earn their depreciation. But even in depression there will be new goods in consumption, which were not there before, or there will be old goods available at the cost of less labour. The former makes the standard of living, even in depression, higher than it otherwise would have been. The latter, insofar as it creates "technological unemployment", makes the employment position for the moment worse. When the next boom comes, however, there will be a larger reserve army of employees to carry expansion further again, so the next expansion will be smoother and swifter. Economic progress, at bottom, consists of making labour more effective, so that basic essentials like food and clothing do not exhaust the whole of man's productive powers, and it is therefore possible to produce the materials of a higher standard of living. Each boom creates capital equipment capable of replacing human labour; each succeeding slump releases the labour thus potentially set free, and is

in turn superseded by a boom which employs this labour to create new productive equipment. The strain to the whole social and political framework set up by successive depressions is however very serious. When economic policy is discussed in the last chapter consideration is given to means whereby *smooth* economic development may be brought about, lessening the periods during which labour set free by technical progress is unemployed, and thus rendering the potential gains of economising in labour more promptly realised.

¶ THE GENERAL CONCLUSION of this chapter can now be summarised. It set out to indicate the main forces operating in the economic society of the present day, outside Russia and the primitive economies of Africa and the East. As presented it deals with this economic system as a whole: the fifth chapter on international economics will show how the argument is affected by the division of the world into nations-states which may follow different economic policies. The common man is most concerned with economic life as it affects his employment as a wage earner. The summary is therefore concentrated upon the forces determining the level of employment.

The propensity to save is a fundamental characteristic of the existing economic system: the marginal efficiency of capital and liquidity preference are both psychological, but are determined by the psychoses developed by that system: the quantity of money is factual.

Let us examine the course of a normal trade cycle, starting from conditions of depression. In depression investment is at a low level: therefore saving is at a low level; therefore the national income and the level of employment is low. Should employment be temporarily created by producing consumers' goods alone in such circumstances the effect would be momentary only; part of the income earned in this way would not be spent on

consumers' goods. Failing an increase in investment to absorb this "saving" the result would be to throw people out of work again, and thus reduce *their* capacity to save. Saving cannot exceed investment and, given the propensity to save, the national income cannot rise above the level at which the amount people desire to save is equal to the value of current investment.

In such circumstances the rate of interest is likely to be low, because the unwillingness of entrepreneurs to borrow for investment is likely to outweigh the high liquidity preference which depression engenders. Wages may have fallen, but this is by itself unlikely to have had any definite effect, because a fall in *all* wages will tend to induce a fall in all prices, and leave things where they were. But the fall in wages *may*, irrationally, have encouraged entrepreneurs with a prospect of docile labour and thus increased the marginal efficiency of capital (which is mainly a guess about future profits). It may also have contributed to the fall in the interest rate, by rendering the quantity of money greater, relative to the demand for it for actual transactions. On the other hand in those industries producing goods mainly for the consumption of the workers, depression will have been intensified.

New inventions, new tastes, the growth of population, and the physical exhaustion of capital goods which must be replaced will after a time raise the schedule of the marginal efficiency of capital: estimates of future profit will rise above the low interest rate; new investment will expand. (Great Britain got out of the trough of the depression after 1931 by a recovery in house-building, which took advantage of the low interest rates then ruling, and in turn stimulated new investment in the furniture and equipment and transport industries.) This new investment will stimulate a lot of employment in the consumers' goods trades, because, with the national income

at a low level when it starts, the proportion of income saved will be low. Thus nearly all the income generated by investment will be spent on consumers' goods, and nearly all the income earned in the consumers' goods industries will again be spent on more consumers' goods. If the interest rate remains low, investment is likely to increase cumulatively as confidence spreads. If it does, then the national income is likely to grow too, but not at the same proportionate rate as investment, because as it increases saving absorbs a bigger proportion of income, and the volume of investment needed to sustain income at its new high level grows.

If this movement continues full employment *may* be reached, i.e. a stage when all those seeking work are either in work or in transit from job to job. If investment still continues to expand, the result will be inflation. The incomes created will be in excess of the value of the current output of consumers' goods, and their prices will go up. Wages will go up in an attempt to keep pace and the "vicious spiral" of inflation will commence. This rise in wages will upset the plans of investors; work will stop on new projects, the marginal efficiency of capital will decline abruptly, and investment will be discouraged. This effect will be accentuated by a rise in the rate of interest, either brought about by the attempts of the central banks to stop the inflation, or by the general rise in liquidity preference engendered by the dangers of the situation.

It is seldom, however, that full employment, let alone inflation, is reached before the movement of expansion stops. As capital accumulates then, in the absence of such changes as new inventions or the growth of population which introduce new schedules of marginal efficiency, its marginal efficiency falls. In any given state of technical knowledge, clearly the most profitable applications of capital are made use of first, leaving only less productive

population and the effect of inventions. It is also possible to explain why the "propensity to save" is so ineradicable an element in a free enterprise society. Using the labour theory of value, it is doubtful if Marx could perform either of these tasks in a manner capable of convincing an objectively-minded critic. In view of the importance of Marxism in contemporary thought it is worth while examining his arguments. They fall into two parts, the former an assumption about the behaviour of capitalists, the latter an examination of the consequences of this behaviour, assuming the hypothesis to be correct, which must be worked out by the methods of economic analysis. The assumption is that the capitalist is driven by the inward laws of his nature to accumulate and invest. To quote Marx, "Accumulate! Accumulate! That is Moses and all the prophets! Industry furnishes the material which saving accumulates. Therefore you must save, you must save: you must reconvert the largest possible proportion of surplus value or surplus product into capital. Accumulation for accumulations sake, production for production's sake. This was the formula by which the classical political economists gave expression to the historical mission of the bourgeois period."

"It must never be forgotten that the production of this surplus value—and the reconversion of a portion of it into capital, or accumulation, forms an indispensable part of this production of surplus value—is the immediate purpose and compelling motive of capitalistic production. It will not do to represent capitalist production as something which it is not, that is to say as a production having for its immediate purpose the consumption of goods, or the production of means of enjoyment for the capitalist."

This, then, is a quite unequivocal proposition, and not incompatible with the assumptions upon which the analysis of the previous sections of this chapter were based.

Let us examine the consequences according to the Marxian theory of value. "The value of a commodity is the amount of abstract human labour embodied in it, and that amount is measured by the amount of social time required to produce the commodity under average conditions and with average ability on the part of the labourer. (Value equals socially necessary labour.) . . . The value of labour-power, as the value of all commodities, is determined by the labour-time necessary for its production and reproduction, i.e. by the labour time necessary for the production of the means of subsistence of the labourer . . . Labour-power is the source not only of value but of more value than the labour-power has itself . . . The value of means of production transferred to the product is never greater than the value they themselves lose in the transference." Value, then, is a function of the socially necessary labour-time embodied in a commodity and surplus value a function of the ratio of the value of the product to the value of the goods with which the labourers are rewarded. The latter ratio is termed the "degree of exploitation". The value of raw materials worked up and of instruments worn out in the process (which Marx calls "Constant Capital", as distinct from "Variable Capital" invested in wages) is passed on to the value of the finished product unaltered. Thus the ratio of surplus value to the value of the product, the degree of exploitation being given, depends upon the proportion of labour-costs to the other costs of production.

It immediately becomes apparent that there are certain difficulties in applying this theory to the economic structure. For example, it follows therefrom that those industries in which the ratio of labour to other costs is highest produce the highest ratio of "surplus value". If value is to be equated to price, and surplus value to profits-cum-interest, the discrepancy between the labour

theory of value and the real world is at once apparent, because prices are *not* determined by the amount of labour embodied in a product without reference to the fixed capital employed, and profits are *not* higher in those industries which employ least fixed capital.

It is possible to attempt to solve this dilemma by interpreting the theory of value in two ways. The first is well stated by Cole. "Marx's theory of value is so little a theory of prices that it is hard in the end to say whether it has any point of contact at all with prices. For it explains or tries to explain, neither why prices are what they are, nor why they fluctuate . . . The Marxian theory of value is a theory, not of prices, but of the social distribution of the resources of production."

This, then, is one way in which the theory of value may be interpreted. The value of the net output of the community is determined by the amount of labour embodied in it, and surplus value is the proportion of that total output, measured in units of labour, which does not reach the working classes. Neither prices nor physical quantities of product come into the picture. It is a formula for measuring the "exploitation" of labour.

But this is not the only interpretation which the labour theory of value will bear, nor is it the only one consistent with the text of *Capital*. In many cases, especially in Volume I, Marx speaks as if goods actually exchange at their value, as defined by him. And, even more important, in the later volumes he moves to and fro between surplus value and profits as if the one determined the other without equivocation. (The theory of "production prices" in the later volumes, which recognises that the rates of return on all capital will tend to be equalised by competition, and thus that goods will exchange at ratios other than their "values", only makes things worse. If value does *not* mean the ratios at which all commodities, including

labour-power exchange, how can such a theory of value provide a proof of exploitation?)

It is therefore incumbent upon us to enquire how far it is possible to interpret Marx's theory of value in a manner consistent with the equivalence of value and price. This can be done at some cost. The defect of the classical theory of value, insofar as it is a labour theory of value, is that it is a cost of production theory of value, and hence, as it makes the value of the product depend upon the value of the factors and not vice versa, upside-down. Secondly, insofar as it is a *labour* theory of value, it suffers from the further defect that it ignores the influence of the productive power of capital as an element in the determination of costs. Now it appears, from his constant insistence upon *socially necessary* labour-time as the basis of value, that Marx was clearly aware of this difficulty. "Socially necessary", as employed by Marx, has no relation to the ideal desirability of the product from the point of view of the society as a whole; it is used to denote the quantity of labour necessary to produce a given quantity of a given product under the economic conditions obtaining in contemporary society. Thus it is possible to interpret "quantity of socially necessary labour" as the equivalent of "labour cost of production under competitive conditions", although it is probable that Marx himself would not agree. The definition of value would then read for "quantity of socially necessary labour", "quantity of labour necessary to produce a given output, given the existing scales of preference, supply of labour and supply of and efficiency of fixed capital". This definition would render it impossible to equate cost of production to total real wages, and surplus value to total real interest and profit incomes, as it would include interest charges as the cost of employing equipment. Just in the same way as "social necessity" determines the relative value of labour

employed in producing different products, it also determines the relative value of capital instruments similarly employed.

Therefore, in the first place, the concept of "surplus value" loses its economic basis; it becomes, like wages, a cost, but it is a cost which forms the income of the investing class. The division between wages and surplus value is, therefore, on this basis, sociological rather than economic. In the second place, as it is no longer possible to measure the value of the total net output of industry in terms of the hours of socially necessary labour embodied in it, it becomes necessary to measure net output in terms of an index number as, clearly, a theory of value is incapable of application unless we have some method of measuring the product. It appears that there is no third course open. Either the theory deals with the relative distribution of the *whole* product, with no regard to its size, or it deals with the distribution of quantities of goods produced.

It is now possible to examine the results which follow from applying either interpretation of his theory of value to Marx's deductions from his fundamental assumption. If the quantity of capital continuously increases, then on the former interpretation (that the value of the product is a function of the employment of labour) the ratio of surplus value to capital invested will fall unless investment reduces the number employed in the wage-goods industries per unit produced, and hence the "value" of wages-goods and so of wages decreases faster than capital increases. This tells us nothing precise about the way in which real profits or real wages are behaving: it only depicts changes in the relative number of hours employed in serving the needs of the working class and the needs of those with a claim to profit and interest incomes. But, by definition, the final result must be a fall in the ratio of surplus value to value of capital invested, as in the process the quantity

of capital is progressing towards infinity and there are obvious limitations upon a corresponding progress towards zero on the part of the labour devoted to the production of wage-goods.

Marx, however, assumes that this fall in the ratio of surplus value to capital invested is a direct equivalent to a fall in the rate of profits: this is clearly, on the foregoing assumption, incorrect. For example, he writes: "Now, we have seen, it is one of the laws of capitalist production that its development carries with it a relative decrease of variable as compared with constant capital, and consequently as compared to the total capital, which it sets in motion . . . It is, in another way, but an expression of the progressive development of the productive powers of society, which is manifested by the fact that the same number of labourers, in the same time, convert an ever-growing quantity of raw and auxiliary materials into products, thanks to the growing application of machinery and fixed capital in general, so that less labour is needed for the production of the same, or of more, commodities. This growing value and volume of constant capital corresponds to a progressive cheapening of products . . . Every individual product, taken by itself, contains a smaller quantity of labour than the same product did on a lower scale of production . . . The immediate result of this is that the rate of surplus value, at the same degree of labour exploitation, expresses itself in a continually falling average rate of profit."

Here we have a perfect example of the hopeless confusion which arises from any attempt to employ the Marxian formula for exploitation as a method of explaining this formation of prices. The formula for exploitation is the ratio in which the total net product of industry is divided between the working class and the capitalists. As the output of industry per unit of labour employed

grows, with increasing capitalisation, the increased yield may all go to labour, or all to capital, or it may be shared between them. If we assume the "rate of exploitation" remains fixed, then whether or not profits or "total real interest incomes" will rise or fall depends upon the rate at which the efficiency marginal of capital is changing. It may well be, if technical progress is taking place, that both real wages and real interest incomes may rise together while the proportional division of the total product remains the same.

If we make the assumption that no changes in technique take place, and that the existing proportions of the factors have been arrived at under competitive conditions, then in any case an increase in capitalisation will imply some fall in the rate of interest. If we take employment as the measure of the value of output, and therefore make the assumption that the value of the total product is unchanged when the amount of capital is increased, we reach the conclusion that the marginal yield of capital must be zero; an additional supply of capital adds nothing to the product.

If the degree of exploitation is *not* fixed (and to do Marx justice it is only for the sake of occasional examples that he assumes it to be so; in general he considers it to be in a constant state of change), we need to know the rate at which the physical output of industry as a whole is changing before we can say anything about the relation between increasing capitalisation and the rate of interest.

Thus, because it is impossible to hold to the Marxian theory of value as a formula for exploitation simultaneously with the employment of "socially necessary labour-time" as the equivalent of "cost of production under competitive conditions", it is impossible to accept Marx's own explanation of the results which follow from his fundamental assumptions concerning the behaviour of

capitalists. His theory of value has no contact with the machinery of price determination which is the pivot upon which economic developments turn.

What appears to emerge from this analysis of the labour theory of value is that it adds nothing to what the insight of Marx as an interpreter of the development of capitalism led him to say about the fundamental inconsistencies of a system which *must* save but cannot continue to accumulate. Indeed, it weakens his conclusions by making the result of prophetic intuition appear to rest upon a foundation of false logic. The proper application of marginal analysis to the problems which concerned him, however, appears to support most of his conclusions.

IV

HOW COMPETITION WORKS

¶ THIS CHAPTER SEEKS to apply the technique of reasoning developed in the earlier chapters to the detailed economic organisation of the contemporary world. Its main object is to explain the detailed workings of a competitive system, and in so doing to see how far economic analysis can be used to explain happenings in any particular industry, and predict their results, and how much it can contribute to judgement on matters of public policy.

Logically the whole economic system is one, and a change in any sector affects the whole: such was the assumption on which the reasoning of the previous chapter was based. This is true, but there are two objections to trying to reason about all the aspects of the whole system at the same time. The first is that it is too large and complex for all the data to be seen together; the second, that long before the chain of circumstances started by any event has worked itself out, another event has started another chain which may have contrary results. Thus the application of economic theory for practical purposes, i.e., its use in the common employment of science to predict the future, must inevitably be based upon *selecting* the data appropriate to the problem. This selection is carried out in a different way for different purposes. In order to deal with the affairs of a single industry the method is to ascertain what would be the logical reactions of the firms concerned to changes in demand, in wage rates, or in any of the other economic forces determining their position, during the period in which the capital structure of the industry concerned may reasonably be

considered to remain unaltered. The common sense of this is obvious: the mechanical equipment of the industry determines the range of change upon which it can embark in its attempts to maintain as high a level of profit as possible. It can, therefore, given the basic change of data, be estimated how profits would be affected. Then, when it is clear that either a rise or fall in profits must result, a further attempt can be made to see what are the most likely effects of the resulting growth or decline of the industry's capital. All this is carried on under the assumption that "other things remain equal": i.e. for the sake of limiting the data to be considered the range is narrowed to the immediate affairs of the industry. This is known as the method of "partial analysis". The alternative method, appropriate to the problem which appears in its name, is the "general theory of employment", which surveys certain appropriate aspects of the whole economic system. The previous chapter employed this method. It was devoted to explaining the forces making for growth and decline in the whole economic system. Consequently attention was concentrated upon these forces and when, in the concluding summary, the forces determining the level of employment were systematically set out, the argument hinged upon the "propensity to consume" which, though it obviously does change, probably changes more slowly than anything else. Probably the most fruitful way to approach *specific* industrial problems is to assume that for the time being there is no change in the capital equipment of the industry: probably the most useful way to think about the problems created by the *general movement* of the economic system is to assume that for the time being the propensity to consume is unaltered. Neither is ever *quite* true, but scientific method in general proceeds by utilising such assumptions. For example, the mathematics of the infinitesimal calculus, which have many

exceedingly practical applications, are built on the assumption that although a point has only position and no magnitude, useful results can be obtained by assuming that it has very small but definite dimensions.

Both methods, partial analysis and general theory, apply of course to the same world of interrelated events, and only practice, judgement and experience of the world can indicate which is the right approach to a specific problem. For example, if there is a fall in the demand for some relatively unimportant product like hair-oil, the results can be worked out quite confidently upon the assumption that the general economic setup would be unchanged by the changes in the hair-oil industry. But if the industry concerned was steel, or coal-mining, almost certainly any change in its circumstances *would* affect the economic climate quite markedly, because of the way in which total incomes would be affected. In a case like this the most useful way to go to work would probably be to see how far one could carry the argument on the assumption that "other things remained equal" and then, when it seemed obvious to the eye of common sense that other things could no longer be equal, to estimate the resulting general changes.

¶ As was shown in Chapter Two, the way in which changes in the demand for a product, or technical changes resulting in alterations in the cost of producing it, affect the prices of goods to the consumer and the wages paid to the workers for their labour, depends on whether competition works smoothly and "perfectly" or not. The term "competition" has for long been used loosely in economic reasoning, although examples are not wanting of the most rigid conclusions having been drawn, wrongly, from arguments turning upon the fact of "competition". It is therefore necessary to commence the proposed realistic treatment of the machinery of competitive adjust-

ment by becoming quite clear what one can and cannot say about competition. Competition has only one meaning which is essential to the concept, and upon which it finally rests. This is that, within the boundaries of the civil and criminal law, every person is free to obtain as large an income as he can from his possessions and abilities.

Some men have abilities which others wish to employ: some have possessions, of which the usufruct is desired by others. All of them will sacrifice as little satisfaction as they can in one way or another, and obtain as much. If they are free to strike a balance in this way, then as the aspirations of one put a limit to those of another, they "compete".

For long it has been considered axiomatic among economists that under conditions of "perfect competition" the economic resources of the community would yield the maximum results in terms of satisfaction. The full argument was set out in chapter two. (It will be observed that competition is now *perfect* competition.) The fundamental idea behind this argument is that under conditions of "perfect" competition the only way in which the individual can increase his income is by excelling his neighbour in the service of the community.

It is essential, for the understanding of what follows, to be quite clear about the foundation of assumptions, in addition to the assumption of "competition", upon which all this rests. It assumes that there is, confronting each producer, one price and one price only, at which he can sell his product. If he attempts to charge a higher price he will not sell anything at all.

This involves, first, the existence of a *perfect market*. In such a market, if identical goods are offered at different prices, the seller whose price is the lowest will be sold out before the others are approached. If they are aware of what is happening then they will put their prices down,

while the original seller, informed by the rapidity with which his stocks are vanishing, will put his prices up. Those who have bought at the original low prices will resell some of their purchases in order to make a profit, and the result will be that after these preliminary alarms and excursions only one price will obtain. This will be the price at which the total quantity offered for sale is taken off the market. If, for this picture, we substitute that of a market through which supplies are constantly flowing to the consumer, it is the quantity which it is anticipated will be coming on to the market over a specified time, instead of the quantity now available, which sets the price. It is easy to see that only in a professional market, like that for wheat or raw copper, are these conditions likely to be found. Thus in addition to "competition", perfect competition assumes a market in which the conditions of a produce exchange obtain; the seller sells at the current price. It is obvious that the range of commodities to the sale of which conditions of such strictness apply must, in the real world, be extremely narrow.

Secondly, perfect competition involves the assumption that the seller cannot *alter* the single price which rules on a perfect market.

It follows from the principle of diminishing marginal utility that the larger the quantity upon the market at a given time, or expected to pass through the market during a given period, the lower will be the price which it will fetch. Now if, when the producer is planning his operations, he finds that the market price (for him, the price which is expected to rule when his output reaches the market) is uncomfortably low, he may, if his normal output forms a large enough proportion of total output for a variation in it to alter the market price, decide to produce a slightly smaller quantity in order to obtain a slightly

higher price. If he can do this, the conditions of perfect competition do not exist because, instead of conforming to the market price, he can alter it. Thus, in order that the conditions of perfect competition may hold good, the individual producer must either produce an insignificant amount compared with the total quantity coming upon the market, so that his variation in output will not alter the market price or, if he produces a larger proportion than this, the alternative sources which supply the market in conjunction with him must be able to expand production, without increasing their average costs, so as to supply a quantity equal to that by which he is reducing output, thus causing the price to remain unaltered. Implicit in this argument is the assumption that the product which is under consideration must be homogeneous: the market which we are considering is the market for one product only, and unless the buyer is indifferent as to the source from which his requirements are supplied this will not be the case. If the buyer is prepared to accept one brand of cigarettes when another at the same price is not available, then they are both, for the economist, the same product. Virginia and Turkish cigarettes at the same price are not the same product, because the smoker accustomed to the one will not accept the other as a perfect substitute. This does not mean that if the *total* supply coming on the market increases, prices will not fall: all the time that tastes are unaltered, such will be the case. But the *individual* producer cannot alter prices by altering his output, because his contribution to the total is too small.

Returning to the device of measuring the reaction of demand to change in price which was introduced in Chapter II, this situation can be described in terms of *elasticity* of demand. The elasticity of demand for the product of the single firms in a perfectly competitive market is *infinite*, because if he were to cut his price at all

he could sell a practically unlimited quantity. The formula, it will be remembered, is % increase in demand.
% fall in price.

One can now catalogue the conditions of the "perfect market" which have been added to the concept of competition to make it into "perfect competition".

1. There can only be one price prevailing in the market at the same time;
2. No producer can, by his individual efforts, alter that price; he must accept it and either produce or refrain from producing as his cost conditions allow;
3. As a corollary of 1, the product of all the producers must be interchangeable: the consumer must be indifferent between them.

If the market is perfect, as defined, it is obvious that only firms of the ideal size, and thus of the maximum efficiency, will be able to continue to operate permanently. Under modern conditions the most efficient size of the firm, or the "optimum" firm, is mainly determined by a balance between the economies of large scale production, which are essentially the advantages gained by splitting up and re-splitting processes of production into specialised operations, and the growing cost and difficulty of effectively co-ordinating all these processes as their number increases. In any given state of technical knowledge and stage of development of the art of scientific management it is almost certain that, from the point of view of producing as cheaply as possible, an ideal size for the firm in any one industry will exist. If the firm is smaller, technical inefficiency will outweigh the ease and cheapness of management, while if it is larger then almost certainly it will be top-heavy with expenses of management. At the ideal size the firm will enjoy as many of the economies of specialisation as are possible without incurring a sufficient increase in the costs of co-ordination and supervision to

outweigh them. This condition will be satisfied at a different scale of production in different industries; in some, like printing it may be satisfied by quite a small firm, while in others, like the motor-car industry, the ideal size for the firm is probably very large indeed.

Nor is this all. If the market is perfectly competitive, in the long run each individual firm will only be able to produce that quantity at which the cost of production is lowest. Assume ideal size plants to have been installed, and review the costs for which they can produce different outputs. At low outputs, below those for which the plant was designed, the burden of fixed costs—rent of buildings, interest on fixed capital equipment, salaries of directors etc. will have to be split up over a small number of units of the product, and cost per unit will therefore be high. As output increases this burden of fixed costs will become progressively lighter per unit produced, but a point will be reached, when the output for which the firm was designed is being produced, beyond which any increase in production can only be secured at the expense of higher variable costs. Overtime, at special rates, will have to be worked, stocks of raw materials will exceed the available storage capacity, additional workers will be falling over each others' feet, and so on. These increased expenses will outweigh the fall in overhead costs, and the cost of production will again rise. If the market is perfect, and if competition works smoothly, after a sufficient lapse of time all the less efficient firms may have become bankrupt. The market price then may be high enough to give all the firms which remain attractively high profits. New firms will enter the market, until at last if the process works smoothly the price is just equal to the average costs of the most efficient size of firm, operating at its most efficient scale of output. If more, or less, is produced, costs will exceed this price, as now shown, and thus the quantity

which can profitably be produced by each firm will be quite definite. No alteration in the output of the firm can, by the definition of the perfect market, alter the price, and only at one level of output can the firm cover its costs.

In terms of the original definition of competition it can now be seen how the balance between the conflicting interests of all our "economic subjects" can produce a kind of harmony. In each industry production will be carried up to the point at which the money payment which is necessary to secure the last amount necessary to produce the "ideal output" as defined above is equal to the sum which the most reluctant consumer who will buy at all will pay for the product. As men are so diverse in their tastes, it is safe to assume that they can be ranged in order of their desire to enjoy any good, or their reluctance to undergo any effort. Thus all those who produce the product, except the last man to be attracted by the wage, and all those who enjoy the product, except the last consumer who is prepared to pay the price, may be assumed to get more than they sacrifice from the transaction. This will be the case in all industries if perfect competition is universal and consequently it follows that, given the tastes of the community and the capacity of the producers, any deviation from this balance of interests, this "condition of equilibrium", would mean that in one industry the reward of effort was in excess of that in another—in other words that the resources of the community were not being distributed according to the general balance of preferences of its members.

¶ BUT NOW, REVIEWING the definition of the perfect market, a difficulty arises. Is it reasonable to suppose that in all cases the ideal firm, which may be very large and which tends to get larger with every technical advance, will *not* be able to influence price by means of altering its output. It will be recollected that this would

only be the case, (a) if the output of the firm was an insignificant part of total output, (b) if other sources of supply could increase their output, *without altering their costs*, when the first firm reduced output. Once simple primary products like wheat and coal have been dealt with, and things like machinery and the multitude of branded, advertised and strongly differentiated consumers' goods are considered, there is good reason to doubt if (a) exists in very many cases, and strong grounds for supposing that (b), if it can occur at all, will be quite exceptional. Thus it appears that to argue direct from the results of perfect competition to the desirability of unleashing "competition" in its unqualified form upon the world, is unjustifiable.

The concept of "perfect competition" is thus revealed *not* as the natural and inevitable result of competition, but as a sort of code of Queensberry rules for economic competitors, a code which many of the earlier economists, with very little qualification and as little justification assumed to be normal in the conditions of the real world. Under more modern conditions perfect competition is only competition in special circumstances, and in somewhat unusual circumstances.

It is therefore necessary to relax the somewhat improbable conditions of the perfect market, to the extent that one allows the output of the producer to have some effect upon the price at which he can sell. He is now confronted, *not* with the market price to which he must conform, but with a series of possible prices at which he can sell, and, associated with them, a series of quantities which, at each price, the market will take from him. The elasticity of demand for the product of the single firm is less than infinite. How will he "compete": what steps will he take to maximise his income? He will behave in exactly the same way as the producer for the perfect market: he will

increase production all the time it pays him to do so, and stop at the point when a further increase would lessen his income. The circumstances of the two producers are different, however, in one very fundamental respect. The producer under conditions of perfect competition will only be concerned with his costs; the price per unit he will get for his product is fixed for him. He will produce until the additional cost of producing one more unit is equal to the additional revenue he will obtain from its sale. (This principle of action is fundamental to all competition, perfect or imperfect, but leads to very different results in the two cases.) As the price is the same whatever his output, the gain from one more unit produced will be the price of that unit; as the average cost of production, however, is different for any different quantity produced, the additional cost of producing one more unit will not be the same as the average cost of production. It will be the prime cost (wages, raw materials, etc.) of the additional unit, combined with the *altered* share of the burden of overhead costs to be carried by a single unit. This will be less than average cost all the time that production falls short of the point at which average cost is at a minimum, because average cost is falling, and clearly, the addition of any quantity to a series which causes the average of the series to fall must be less than the previous average. In the same way the specific cost of that additional unit which just brings the total of production up to that point at which average cost is at a minimum must be equal to average cost, and the succeeding one, which causes output to exceed the point of minimum average cost and thus to increase average cost, must have a specific cost exceeding the average. As we have seen, the conditions of a perfect market ensure that in the long run prices will be equal to the minimum average cost of production, and as the previous paragraph shows, the specific cost of pro-

ducing each additional unit, short of the quantity at which average cost is at a minimum, is *less* than the minimum average cost, which is equal to the price in long-run equilibrium. Therefore it is less than the additional revenue which its sale would produce. Therefore the total net income of the producer will be less than it might have been, if he stopped short of the point at which the cost of producing one more unit would be equal to the gain from its sale; therefore he will produce until the two are equal and then stop.

Apply this same principle of action to the producer for an imperfect market. As he increases his output the price of his product will fall: if the price which the firm can obtain for increased quantities is falling, as it is almost certain to be, then the specific addition to revenue from the sale of each additional unit must be less than the average price. This is quite easily grasped if one takes a simple example. If twenty units of the product can be sold at £100 each, and twenty-one at £99 each, the additional revenue from the production and sale of the twenty-first unit will be the new unit price, minus the fall in price multiplied by the previous output, i.e. £99— $(20 \times £1)$, which is £79.

The common principle of action for competitors, under all circumstances, is to continue production up to the point at which the specific cost of producing one more unit, or the marginal cost, equals the specific gain from its sale, or the marginal revenue. If the market for the products of the firm is such that it is clear to the management that additional sales can be obtained by cutting prices, then the point at which marginal cost and marginal revenue are equal will tend to occur at a scale of production lesser than that at which the firm is operating most efficiently. This is so, because the specific cost of each additional unit will be rising as it approaches the point at

which average cost of production is at a minimum although up to that point it will be less than average cost, and by definition rising faster than the average cost (which is falling). Over the same range of quantities, as the prices which can be obtained are falling, the specific net addition to revenue resulting from each new unit sold is falling faster than prices. Thus marginal cost and marginal revenue are likely to meet before the output at which average cost is at a minimum is reached. The only exception would be a case in which profits were so high that *marginal revenue* was equal to the minimum average cost. This is only another way of saying that the monopolist will restrict production.

The important thing about this method of saying so is that it shows how the element of monopoly, which may be slight or may be large but is nearly always present in a firm's market, will be automatically exploited if the producer for such a market follows exactly the same methods as the producer whose market is perfectly competitive. He behaves in the same way but with different results. Thus it breaks down the clear-cut line of division between the "wicked" monopolist, who, all agree, should be restricted by law, and the "virtuous" competitor, in whose hands the consumer may be safely left.

It may be asked, will not the high profits earned by any firm in a strong monopoly position invite competition and thus reduce prices to the "competitive" level? It need not do so; new firms will no doubt be tempted in, and this will no doubt reduce the profits of the others and perhaps the total profits of the trade, but no one can argue that because there is a large number of competitors the market is perfect. If the market is fairly perfect the weakest firms will go bankrupt, their customers will go to the others, whose costs will thus fall, and prices will equate themselves to costs in the normal manner. But the entry of new

firms may cause the market to become more imperfect. Suppose that a new firm succeeds in attracting to itself some of the customers of an established one, so that it too now has a "private market" within which it too can choose what price it will charge. The products will *not* be identical, but closely similar. (If they were *identical*, the market would be perfect.) Or a new shop may collect customers from two other shops by establishing itself between them. It is possible, and even probable, that new competition in an imperfect market may reduce profits without reducing prices. The real crux of the matter is the effect of new firms upon the degree of perfection of the market: nothing else matters. If the demand for the product of each firm becomes *more* elastic, the market is nearer to perfect competition, and vice versa. (This argument is explained more fully in the appendix.)

The theory of competition may now be restated in a series of propositions.

1. There is no difference between the behaviour of the "competitor" and the "monopolist"; both behave in the manner defined as "competitive" but their differing circumstances lead to different results.
2. Perfect competition is not the same as "leaving things alone". It is a special case of competition and, under certain circumstances, it leads to the ideal output of the commodity concerned. This result is a desirable state of affairs; much economic legislation is devoted to obtaining the *results* of perfect competition (without legislators always being quite aware what they are doing).
3. Imperfect competition leads to a misemployment of the resources of the community; it makes prices too high and output too low; it leads to too many firms existing in each industry, all producing below their capacity.

4. Imperfect competition is the direct result of "letting things alone" and allowing people to "compete". It does not, as perfect competition does, set on foot forces which if they worked smoothly would automatically correct mistakes in the scale of output, but tends to render them permanent.
5. The fundamental condition of imperfect competition is that the individual firm, is able to affect the price which its product fetches, either by restricting output or by advertisement. This may either be because (a) the most efficient size of firm is very large compared with the total demand for the product in question, or (b) because the product of the different firms in the industry is not completely homogeneous (customers are not indifferent between them).
6. Where competition is imperfect because consumers have a preference (rational or irrational) for the product of one firm over others, it is impossible to say what the result of the entry of new firms into the industry will be. They will "increase competition" in the sense that profits will be reduced all round, but unless they make the market more perfect they need not lower prices. Indeed, if they do make the market more perfect, as one of the implications of the imperfect market is too many firms all working below capacity, and as the diminution of waste implies operation closer to full capacity, they will reduce the number of firms and run some risk of being eliminated themselves. Thus it is possible that a rapid multiplication of firms may be a sign that competition is becoming *less* perfect.

In general, therefore, it can be said that competition as it operates in the contemporary world does not justify the claim of the classical economists that competition per-

fectly adjusts supply and demand to the mutual advantage of every one, because in many fields imperfect competition is dominant. It should not, however, be assumed that it is either practical or desirable to attempt to set up "perfect competition". To do so would be impossible, because of the modern technical factors making for large units of production. Also, it should be noted, it is the conditions of *equilibrium* under perfect competition which have certain advantages. Even these advantages, it must be remembered, take for granted the existing distribution of income, and even though it may be a good thing to have production perfectly adapted to demand, this would still leave much to be desired unless the incomes in the expenditure of which demand is expressed were much more equal than they are. And at this stage the point first raised in Chapter II must be emphasised. There is no guarantee that, given the *conditions* of perfect competition, equilibrium would ever emerge. The conditions of perfect competition are that no one firm can consciously alter the market price: it therefore cannot estimate what the results of its actions will be. Thus, if in a perfectly competitive industry abnormal profits were being earned and new firms entered the industry, there is no guarantee that exactly the right number would come in to *just* reduce profits to the "normal" level. More probably, too many would come in: prices would fall, profits would become abnormally low, then too many would simultaneously go out of business, and the see-saw would recommence. Those markets in the real world which are most near to perfect competition are notoriously unstable, and often prove to be the origin of trade depression. When they do their loss of purchasing power is amplified in the more imperfect markets by firms which *can* do so cutting down output to keep up prices and profits.

Thus the picture of equilibrium under perfect competi-

tion is of normative value only. By using it as a yardstick, one can measure the results of monopoly; it can form a valuable guide to social and economic planning. But it in no way provides a direct basis for economic policy.

¶ IT HAS BEEN shown that the competitive system of the modern world does not give rise to the automatic and stable equilibrium of Chapter II. How then does it work? This section outlines the operation of the pricing system for goods and the following one explains the labour market. The price of consumers goods and the wages of the workers are the two most important facts in any economic society, because they affect the largest number of people.

Those primary products in which the market is more or less perfectly competitive need not occupy much space. The competitive equilibrium analysis of Chapter II, and the previous sections of this chapter explain how such markets work, and indicate that the main difficulty about them is their instability. If prices rise or fall sharply it is extremely probable that the resulting contraction or expansion of production capacity may be overdone. A classical example is the manner in which the high food prices ruling in 1915-20 led to an over-expansion of world production relative to purchasing power (or to the expansion of output past the point at which world elasticity of demand was less than unity), which took long to come to fruition but which played its part among the forces making the 1929-33 depression inevitable. Probably nothing short of international co-operation on a scale not yet achieved can overcome the difficulties resulting from the adaptation of the supply of primary products to the shortages caused by war. But the lesser changes brought about by crop failures, new techniques, and shifts in demand can be dealt with by the machinery of organised speculation, if it works properly. It is the task of the

professional speculator to foresee the future, and he gains his income by estimating the future relationship between demand and supply in competition with other experts. In a professional speculative market the present price will not tend to differ from the future price, except by the cost of interest and storage on the one hand, and the producers' desire for "cover" on the other. Thus price movements will be "ironed out" and the destabilising effect of sudden changes avoided. So in general, the better the futures markets work, the more closely the behaviour of the primary products producers will approach to that described in the text-books. But this depends not only on the speculative futures markets working smoothly, but upon the willingness of governments to let them work, whether they are working well or ill. In many countries an appreciable proportion of the national income depends upon one primary product: rubber in Malaya and coffee in Brazil provide examples. In such cases the governments of the countries are apt to try to keep up the world prices by what are known as "valorisation schemes", and no study of the forces determining the prices of these goods for which the market is, from the viewpoint of their producers, dangerously perfect would be complete without reference to them. They fall, however, more easily into the class of international economic problems, with which the next chapter deals.

How are the prices of bars of soap, saucepans, shirts, and packets of cigarettes (apart from taxation) determined? On the one hand there is the factor of demand. This, insofar as it influences economic decisions, is the picture in the minds of sales managers of the different quantities which might be sold at different prices. But this is not a simple picture: several variables enter into it. What are the prices of the goods most closely competing with the product to be sold, and—even more important—

how will these prices change in response to a change in the price of the product concerned? How effective is the advertisement of the firm concerned, and what would be the result of changes in the advertising policy of its closest competitor? These are too many questions to be answered simultaneously in all their permutations and combinations by any human mind. To get a theoretical answer to the problem, the economist makes the assumption "all other things being equal". To get a practical answer to his problem, the sales manager (who is no more omniscient than the economist), takes care that other things *shall* be equal. In other words, unless he sees quite clearly that he has an overwhelming advantage in terms of cost of production or quality of product over his competitors, he takes care *not* to irritate them into altering their prices or increasing their advertisement. So, as far as price and advertising policy are concerned, the position is much like that of nation-states of which the ultimate interests are in conflict, but which, short of war, must find a *modus vivendi*. "Diplomatic" advantages, i.e. the extension of sales in a particular town or district, the securing of a contract from a public authority, are constantly being sought, but major changes in price, and sudden increases in expenditure upon advertisement tend to be avoided. All the firms in the "industry" (producing a collection of separately branded but basically similar goods, like all the different brands of chocolate or all the types of motor-cycle) continue to sell at the prices upon which their advertisement has been founded, and to keep their advertising expenditure fairly steady. Thus, "marginal revenue", the net gain to the income of the firm over a period, given the last unit of the product it sells per day or week, tends to be conceived as net *maintainable* marginal revenue. A long view is taken, and prices tend to be kept at a level which, year in, year out,

it is hoped will maximise profits. If a sudden opportunity of profit is taken, and price is cut (or raised), then opposition may be inspired from other firms producing similar products. If the price of the goods has been widely advertised at a fixed price for a long time, a change in price may even antagonise the consuming public. An increase from a price which has been taken for granted may easily cause consumers to pause, consider, and then change their habits: a fall in price from a level which advertisement has assured the public represents the maximum possible value for money may also have dire effects upon sales. So in normal times prices tend to be very steady in the market for branded consumers' goods. The quest for the highest rate of profit which it is possible to maintain over a period involves, first, avoiding unduly aggressive competitive methods. It often leads to price agreements, to arrangements whereby distributing firms are forced to maintain retail prices set by manufacturers, to the exchange of directors between firms in order that their policies may not clash, and even to complete amalgamation of all the firms in the industry under common ownership.

When, however, the policy of amalgamation or price agreement has put complete monopoly powers into the hands of the leaders of an industry, the second factor limiting the rate of profit which it is possible to maintain over a period takes the place of the fear of unleashed competition. This is the power of the state: if all the power to exploit the consumer which formally resides in the hands of any one of a hundred great industrial groups in Britain or the U.S.A. were to be utilised to the full, inevitably a democratic government would be spurred to take action. In Britain the threat of nationalisation; in America the anti-monopoly legislation which grows year by year, constitute a permanent check upon the monop-

list. Thus the industrial administrator in this field comes perforce to take a fairly wide view of his responsibilities. On the one hand he is responsible to his shareholders: the modern unit of industrial organisation is the limited liability company. The effective ownership of industry, and the right to a share in the profits declared by the directors to be available for distribution, are widely different. Control resides in the directors of companies, operating other people's capital in enterprises of which the legal owners, concerned exclusively with the security of their capital and the hope of profit, know little or nothing.

In law they are controlled by meetings of shareholders: in practice, the powers of the shareholders (when in fact they meet) are confined to dismissing or appointing directors: even this is limited, because when a new company is founded the board of directors is *de facto* in existence as part of the productive set-up taken over by the public. But a director must have a reputation for not losing other people's money if he is to succeed, and the more *steadily* profits accrue to shareholders—this is even more important than the dividend being occasionally high—the higher stands the credit of the director.

But on the other hand, the directors have a responsibility to the public. In theory this is looked after by competition but, as we have been shown, in an imperfectly competitive market this does not mean much. In practice it is looked after by the power of the state and by its reflection in the attitude of the business administrator. (In the eyes of those who have worked with both, there is often a marked similarity in the outlook of the "big" businessman and the senior civil servant.) Normally, too, he is also concerned with the well-being and stability of employment of the staff of the industry, even if only as a result of anxiety not to come into conflict with the trade unions. All these motives tend to make caution and

continuity the keynote of industrial policy in the consumers' goods trades, and to cause "competition" for most of the time to consist of polite and orderly parallel progress. (Indeed in many business circles in Britain the word "competition" is seldom used without a qualifying adjective. "Healthy" competition means discreet and gentlemanly sales pressure; "cut-throat" competition means the competitive cutting of prices in the manner set out as normal in the text-books.)

This is not the whole story, however. This uneasy force is from time to time broken by economic war, when a new product or process comes upon the market, or when the rate of profit shown by a firm or industry is so abnormally high as to tempt an invasion of its preserves. The concept of "normal profit", or a level of profit *just* large enough to keep existing firms in the market but not *quite* high enough to tempt new ones into it, can be fitted fairly easily into those sections of industry where competition is more or less perfect. In such a market the product is uniform, firms all tend to be of about the same size, and the only difficulty is that the level of profit necessary to tempt new firms to take the initial risk of entering upon production tends to be much higher than that which, if it were not earned, would cause some existing firms to cut their losses and get out. The difference is a form of rent.

The concept is not easy to fit into an imperfectly competitive market for obvious reasons. Firms are not the same size, products are not identical, and there is no certainty that competition will bring to each surviving firm in the long run an output at which costs are at a minimum. (As a matter of fact, the average cost of production to the firms in an imperfect market can only be at a minimum when profits are abnormally high, and one of the first effects of increasing competition will be to increase average costs by lessening sales.) But there will,

in fact, be some level of profit which will attract competition. Despite their desire to maintain profits at a steady level, the directors of an existing firm will decide to enter the market, or to cut prices and increase advertising so as to increase their share of it. Or if the industry is one in which a one-man firm can operate, an ambitious man with capital, or with command over capital, will come in. For the time being prices may bear no relation at all to costs of production; advertising may be extended well beyond the point at which it shows a *present* return in the shape of comparably enlarged sales. All efforts will be devoted to altering the size of the area in the market controlled by each of the competing firms. Ultimately some may go bankrupt, leaving their markets to be divided between the survivors. Or a recognition that general bankruptcy lies ahead may overtake the competitors, and an uneasy peace will be restored, some having gained and some lost ground: the new position will be approximately maintained. The analogy with the relationship between sovereign states, alternating between diplomatic conflict and open war, is complete.

The consumer may or may not benefit as a result. If the struggle centred round the introduction of new and more economical techniques, then very probably prices will have come down all round. If, on the other hand, it was the high profits earned by a semi-monopolist which invited attack, then as was shown in an earlier section, prices may even have risen. Profits will have been reduced, but the reduction will be due mainly to the cost of maintaining the increased stock of capital equipment now serving the market, and perhaps to the permanently increased cost of competitive advertising. Competition when it flares up into active reality in an imperfect market is thus wasteful in its multiplication of capital equipment, except when new techniques are brought into play. (In

nearly all cases however the latter element is present in more or less strength.) But the intervening periods of caution and orderly production add to the stability of economic life, although they tend to slow down its progress and to limit the rate of growth of new capital.

¶ THE LABOUR MARKET in a modern economic system is dominated by the machinery of collective bargaining. On one hand the trades unions, on the other the employers' associations, bargain about the rates which shall obtain over the whole field of most important industries. If all the workers were in one union and all the employers in one association, the position would be indeterminate. At the one extreme the workers could claim wages equal to the whole of the product of industry in excess of contractual obligations to pay rent and interest, minus the absolute minimum (which might be fairly elastic) for which all the businessmen now in operation would be willing to undertake the risk and responsibility of management. If it was pushed beyond this point, some businessmen would close down, and unless their fellows were willing to take up the functions which they abandoned, including the provision of 'risk' capital, in return for a lesser income than they demanded, unemployment would rise, and the total income available for distribution would fall. But the income *per head* of the workers still in work might rise, and the total working-class income might even rise for a time. If the union was willing to see unemployment increase, the wages of those in work might be forced still higher. At the other extreme, wages might be forced down to the limit below which the capacity of the workers to undergo the labour of production was impaired, and the total real income declined.

In practice, however, the different industries each have their own bargaining machinery, and a fringe of unorganised workers and unassociated employers is to be

found in most, though not all, trades. At any given time there will be for each industry a recognised wage schedule which may be local or national in its application. It will not be too far removed from the general average of wages, unless the circumstances of employment are very special indeed, because ultimately workers will not be likely to stay in an industry where rates of pay are altogether out of step with what unskilled labour can get elsewhere. Indeed in many countries including Great Britain there are provisions for legal minimum wages in industries where the inadequate bargaining power of the workers threatens to cause an actual lowering of physique and deterioration in the human quality of the employed. At the other end, employers will not pay wages greatly in excess of what workers of similar skill and capacity receive elsewhere, because they need not do so in order to satisfy their requirements.

At this recognised rate then, the bulk of the employers in the industry will continue to engage labour up to the point where they estimate that the addition to the income of the firm resulting from the employment of more men will be less than the cost of paying them. The value of the marginal productivity of labour *to the firm* will be adjusted to the wage rate by varying employment until the two are estimated to coincide. Here, as in the formulation of price policy, a long view will be taken. A skilled gang will not be broken up because there is not enough work for it to do for a day or a week if it is estimated that the fall in output while a new gang is being broken in to teamwork will be more expensive than the cost of paying wages during a short spell of idleness. But, in general terms, marginal productivity will be adjusted to the wage rate. In a perfectly competitive industry, the employment of labour will be carried up to the point at which the market value of the marginal product of labour equals the wage

rate, because the marginal income derived from the last unit sold is the same as its price. In an industry operating an imperfectly competitive market marginal revenue will always be less than price, as was shown in the earlier sections of this chapter, and so the market value of the marginal product of labour will be greater than the wage rate. This argument must not be misunderstood. It does *not* mean that in the first case the income of the workers exhausts the whole of the sales income of the firm, and that in the latter case profits also take a share. The adjustment of marginal costs, of which labour costs form a part, till they equal marginal revenue, determines what the most profitable level of output will be. At that output profits may be high, or low, or a loss may be made, according to the extent to which total costs fall short of, or exceed, total revenue. It is this which determines the distribution of the income of the firms between wages and profits and other charges. But in a perfectly competitive industry, the employer continues to employ labour until falling productivity forces marginal cost up till it equals *price*, while in an imperfectly competitive one marginal revenue, falling faster than price as output and sales expand, comes down to meet marginal cost often before the point has been reached at which the marginal costs have started to rise at all. In either case employment will be carried up to the point when the wage rate is equal to the value of the marginal product of labour *to the firm*: in perfect competition this is the same as its value to the consumer: in imperfect competition it is less. From the point of view of wage bargaining there are two important differences.

(a) The firm in an imperfect market can always promptly recoup itself for a rise in wages by putting up prices (at the expense of some loss of sales) while the firm in a perfect market will have to cut down output first and

wait for the forces of the market to cause prices to rise.

(b) The general "looseness of play" of an imperfectly competitive market, and the absence of a clearly defined normal level of profit renders it easier for a union in a strong bargaining position to squeeze profits to the benefit of wages.

To return from this digression: after employment has been so adjusted that the value of the marginal product of labour (to the firms) is equal to the wage rate, there may remain a surplus of the type of labour usually employed in the industry. If labour is unorganised, competition among workers will bring wages down to about the same level as those ruling in alternative jobs of a comparable character in the locality. If the surplus is general these too will tend to become worse paid, and if the general level of income does not change, i.e., if the cyclical forces of Chapter III are not contracting economic activity in general, the surplus will be absorbed.

If on the other hand there is a union, it will in such circumstances be in a weak position, with unemployed members depleting its funds. It may be forced to accept an agreed reduction, lessening the burden of unemployed members upon its funds, but lessening also the average income of its members. Or it may decide to strike rather than submit. In such a situation what counts is the staying power of either side. In one industry where labour costs form only a small proportion of the total costs of production, the union may still have some power. The higher the capital changes and rents which the industry has to carry without return during a period of enforced idleness, the less the economies resulting from a reduction in wages, the shorter will be the period during which the employers will hold out. The more closely integrated is the labour movement and therefore the more help the union can get from outside, the stronger they are. Finally, if in other

sectors of industry prosperity rules, so that substantial sales are being lost, the more eager the employers will be to terminate the dispute, particularly as in this case the other unions will be rich and inclined to generosity. Reverse the position, assume an industry where labour costs are high, so that expenses nearly stop when a strike starts, assume an isolated union and general depression, and all the balance of advantage is on the other side.

So unless *all* the circumstances of the case are known, all that can be said is that the existence of a surplus of labour in a particular industry *may* lead to a fall in wages. But it may not.

Suppose, however, that before the expansion of employment had carried marginal costs up to marginal revenue the supply of available labour became temporarily exhausted. Competition between employers would then tend to force wages up, unless an agreement was entered into between employers to limit production, to share the market, and not to exceed the previous wage rate. In such a case the union, should one exist, would be in a strong bargaining position. It is very probable that wages would rise. Here again, however, it is the general employment situation which is likely to be the deciding factor. Should the industry concerned be expanding against a background of deepening depression, like the distributive trades in Britain in the early 1930's, wages may fall because of the rapid inflow of labour from other industries. There is little that the union can do by means of wage policy to alter conditions of depression. If wages were to be reduced all round when economic conditions threatened to become worse, then the result would be a fall in prices, caused in part by the resulting decline in purchasing power and in part by competition between the firms whose costs would all round have been reduced. Therefore it is in the policy of the union outside the field of

wages bargaining that their influence upon the level of employment lies, and thus, ultimately, their bargaining power. Outside this field, it is probable that the most useful function performed by the unions in a free enterprise society is to keep the rates of wages in comparable occupations in step. The individual may know that his wages compare most unfavourably with those of persons doing closely similar work elsewhere. He cannot, however, go there, abandoning home and friends. His union, however, can and does know of the discrepancy, and uses it as an effective bargaining counter, thus making the labour market more perfect. A strong trade union movement can have the effect of levelling up wages between comparable employments in a manner which facilitates the best use being made of a given supply of labour by preventing labour power being wastefully utilised in occupations and by firms which cannot render it duly productive. It is probable that far more social inequality is caused by labour being employed in such a way that its productivity is low than by the forces preventing the worker from getting a fair share of his product.

¶ IN CONCLUSION, THERE is one point to be made, linking up the working of the pricing system for goods with the working of the labour market. The records of industrial history show that over a period of years while the total income produced by industry has increased appreciably, the *share* going in wages to the manual worker seems to have remained remarkably steady. It has been suggested that this is intimately connected with the strength of monopoly elements in the economic system. In practice the manufacturer normally takes his prime costs (labour and raw materials) and adds on a percentage to cover his overhead costs and profits. (There is nothing fundamentally incompatible in this with adjusting marginal costs to equality with maintainable marginal

revenue: the underlying assumption is that if the resulting profit is a "reasonable" one the revenue producing it will be safe from attack. And over most of the range of output over which adjustment of output is usually undertaken in an imperfectly competitive market there is not much rise or fall in the *average* labour or raw material costs, so that "prime costs" in the sense of the average labour and material costs will be pretty close to marginal costs.)

Now the greater the degree of monopoly, the greater will be the difference between prime costs and prices. In a word, the percentage added on and secured by employers over and above prime costs, will all over industry add up to capitalists' and landlords' incomes, while prime costs will add up to wage income. Thus the higher the degree of monopoly, the bigger the share of profit and rent in the national income.

There is not yet enough statistical detail available about the working of industry for this interesting theory to be proved or disproved. But it is very probable that the degree of monopoly has an important bearing on the distribution of income between workers and owners, if only because of the apparent power of the monopolist to get back increased money wages by putting up prices, and thus again reducing *real* wages.

V

INTERNATIONAL ECONOMICS

¶ SO FAR ECONOMIC problems have been treated as if they all occurred within a single political system. It is true that the whole of the world outside the U.S.S.R. and the primitive economies constitutes a single inter-trading community, closely linked by purchase and sale and borrowing and lending, which extends across political frontiers. But, as was pointed out in the first chapter, the role of the state in contemporary economic life is very large, and different states, under the influence of "pressure groups" within them, follow economic policies which may diverge and which sometimes come into open conflict. Some of the oldest controversies in economics, like the classical issue of free trade versus protection, are concerned with international economic relations.

The conditions of maximum well-being for the world as a whole (with which no national government is necessarily concerned) are not very difficult to define. The general principles governing international trade are the same as those determining the location of trade within a single country, except for the fact that labour and capital do not move as freely across as within national boundaries. The ideal short-period distribution of resources has been reached when marginal costs equal prices. Therefore in those goods which enter into international trade and for which (allowing for transport cost and tariffs) there is a world price, the best short-term allocation of resources is reached when each country contributes to production up to the point when marginal costs in that country equal the world price. If, when this has taken place, there is a

surplus, it should be exported; if a deficit, importation should take place. Thus Canada, where the marginal costs of producing wheat increase very slowly as output is increased, mainly because of the abundance of suitable cheap land available, should produce a large proportion of the world supply of wheat. Britain, where land is scarce and expensive, but where there is one small area of land so admirably adapted for wheat production that its high cost is counterbalanced, will show rapidly rising marginal costs as cultivation is expanded. Therefore, in normal times, Britain should import most of her wheat supplies from countries like Canada. In this way each country will make the most of its immediate resources. When the adjustment is completed, the average yield *per acre* in Great Britain will be far higher than in Canada, but yield *per man* will be lower. Total production from British resources is maximised if a certain proportion of wheat consumption is provided for by home farms, i.e. over that range of output where the output per unit of the factors of production is higher than it would be if they were devoted to the production of goods to exchange for foreign wheat. But, beyond that range, wheat is obtained more easily by manufacturing exports. The argument is exactly the same as that concerning the ideal pattern of production within one country: it will be recognised as the solution of perfectly competitive equilibrium. It has all its logical attractions and, in the international field, encounters still more difficulties in application than within a single national system.

¶ BEFORE DEALING WITH these, however, a digression is necessary in order to deal with the theory of comparative cost, which is the classical defence of free trade and has found wide acceptance. At first advanced by Ricardo, the argument runs that if two countries can both produce corn and cotton, but the ratio of the cost of

production of corn to cotton in the first country is 2 : 3, while in the second country the cost ratio of corn to cotton is 3 : 2, then, whatever the *actual* costs of production, the first country will do best if it specialises in corn, the second if it specialises in cotton. If they do this, and the first country exports its surplus corn and imports the surplus cotton of the other, both will be much better off, because they will both be concentrating their productive efforts on the field in which they are most efficient. On the assumption that the relative productive capacities of the two countries will not be easily altered, what matters in deciding whether or not foreign trade is desirable is the *comparative cost inside each country* of the goods which can be imported, and the goods which will have to be exported to pay for them. If the cost of the latter is the lower, then it is better to import the goods concerned than to produce them at home. (It will be recollected that in Chapter II comparative costs were encountered before as a factor determining why a man who was more skilful than most people *both* at making shoes and making horse-shoes, but better at the latter, would be well advised to concentrate upon the latter and let other people, who could do it less well than he, sole his shoes. Like Ricardo's countries, the aptitudes of the man were taken as given.) It is no more than a first approximation to a theory of international trade, because as it too often is presented, it overlooks the fact that the ratio of productive costs will alter as the proportions of the different goods produced changes, and relatively abundant resources, which provided the original advantages, become scarce and dear. Moreover it is difficult to move over from comparative costs to the actual money costs and prices on the basis of which international trade is carried out in practice. The foreign trade of the U.S.S.R. can be, and indeed appears to be, carried out on sound Ricardian principles. All imports and exports are

centralised, and the administrators concerned can look at the *ratio* of costs inside Russia between possible imports and possible exports, compare this with the cost *ratio* in the world market, and take advantage of any divergence without having regard to cost *levels*. But for other countries the ordinary application of the technique of marginal analysis, as set out in the last paragraph, is quite as correct (it is in fact another way of saying the same thing), and much easier to follow, because it fits into the working of the ordinary price system and because it shows how the same forces which naturally limit the production of any commodity for the domestic market limit its production for export too. The "comparison" on which the concept of comparative costs is based is always the comparison between the productivity of resources directed, in the same country, either to the direct production of a commodity or to the production of other goods for export in order to obtain the first commodity by exchange.

This is, however, only a short-period view. In the long run the maximum of productivity will only be obtained when the marginal productivity of each factor of production is the same all over the world. This is one reason why, in spite of the manifest advantages to be derived from free trade on the basis of the short-period analysis, all the nations of the world impose tariffs or import restrictions of one kind or another. The bases of comparative advantage are two. The first is permanent and lies in soil, climate and the location of minerals: in these cases the short-term argument is also a long-term one, and is quite unanswerable. The question of the suitability of Britain for producing oranges or Palestine for producing coal, is answered before it is asked. But the economic development of the world has proceeded very unevenly. Consequently the distribution of capital equipment and the specialised industrial skill which comes from its utiliza-

tion between different countries is far from uniform. This provides a different basis for exchange, though one in the short run quite as advantageous. In Britain capital is, relatively to most of the rest of the world, cheap and abundant, and labour relatively scarce and "dear". In India, the reverse is the case: labour is superabundant and capital very scarce. Thus it is cheaper to produce in Britain those goods like machinery in the production of which, for technical reasons, the proportion of capital is high; in India, those for which the proportion of labour is high. The advantage of Britain is cheap capital; of India, cheap labour. But the latter statement is a paradox: how can "cheap labour" or a generally low standard of living for the bulk of the country, be an "advantage"? Admitted, *as things are* the Indians will get their machinery cheaper if they buy it by growing groundnuts than if they make it at home. Admitted also, that they will benefit from having the whole world to which to sell their cheap-labour products if they indulge in reciprocal free trade. But in the long run it is to their advantage to add to their stock of capital as fast as they can, and so increase their industrial skill and their standard of living. Natural advantages, soil, climate, minerals, will persist as the basis of international trade, but the maximum advantage from the world's stock of capital will not be gained till it is more evenly spread.

¶ THE ARGUMENT so far will have been recognised as still no more than the application of the competitive equilibrium theory of Chapter II to international trade: it has been shown that for the world as a whole the maximum short-period advantage would be derived from a pattern of production in which marginal costs were everywhere equal to price. The second stage of the argument showed how on the international as in the national field the ultimate advantage from a given stock

of factors of production would only be derived when the marginal product of each factor was the same in all its various fields of application. It is still too abstract for direct application to real problems. One can only derive a case for unconditional free trade from what has so far been said on the assumption that competition throughout the world is perfect. The case for free trade is only the case for *laissez-faire* applied to the sphere of international trade, and, like the former, stands or falls by the extent to which competition is perfect. Given perfect competition, general economic stability, and universal free trade, there would be a strong tendency for marginal costs everywhere to approximate to the world price level. There would also be a strong, if more slowly operating, tendency for the rewards of each factor to approximate to equality wherever they were found. This would result in part from the mobility of capital and labour, each forsaking areas and employments in which the rate of return was low in favour of those in which it was high. Even if difficulty was encountered in moving the factors however, the exchange of products should logically have the same result in the long run. If some particular area possessed an immovable factor in such abundance that it was cheaper there than elsewhere, demand for those products into which a more than average proportion of that factor was embodied would be concentrated there. Demand from the export trade for products embodying the factor would increase its local price, but until the price of the factor rose to its world price the differential advantages would remain. Therefore equilibrium would only be reached when it reached the same price as in other countries. The one exception (which altogether alters the case from a social point of view) would be labour, which is not homogeneous but acquires skill from the plant it operates and can acquire high productivity in no other way.

It would be misleading, however, to assume that anything like the conditions of perfect competition determine the flow of finished products along the channels of trade, or the location of investment, in the contemporary world. While some world markets for products like wheat and cotton were until fairly recently not far from the conditions of perfect competition, many other products in the world market are classical examples of monopoly. In some cases closely associated groups of businessmen in a dozen countries jointly control the imports and exports of a product. In such cases the result is not the production of the commodity concerned up to the point where marginal cost equals the world price level. On the contrary, the imports into each country are kept at the (lower) level which will maximise the profits to be obtained from exporting it. Prices will be higher than would otherwise be the case and, if the country of origin is a one-product colony where no alternative employment exists, the wages of producers will be lower. Governments too, which are not concerned with maximising the well-being of other nations, take a hand. (Voting, like charity, tends to begin and end at home.) Export boards seek to avoid competition between domestic producers, and to extract the maximum return from the outside world by following policies undistinguishable from those of a profit-seeking commercial monopoly. When a country is a major importer there is an observable tendency, too, for the state to enter the market in order to avoid the effects of competition between themselves by domestic buyers, and thus to buy collectively at a lower price. Those efforts are not always successful and they are not always wise, but their existence is undeniable. Against this background, to select the single device of the protective tariff or quota as the only barrier standing between the world and the ideal short-run distribution of trade is absurd.

¶ WHEN ONE TURNS to the forces determining the distribution of labour and capital, and thus the relative levels of income, in the contemporary world, one moves several steps further away from perfect competition. The distribution of capital in the modern world has been greatly influenced by two facts. The first has been the deliberate use of the power of the state to foster the accumulation of capital within certain national boundaries. Using not only the weapon of protective tariffs but also devices like the state control of subsidised railways (in the earlier stages), both the greatest modern concentrations of capital, that in Germany and that in the U.S.A., have taken place. Indeed Frederick List, the author of the German Customs Union and thus the source, in the world of ideas, of German power, was the first economist to present a serious scientific criticism of Ricardo, putting up against the short-period analysis of the latter the essence of the criticism set out in the last section. Of course, developments of such magnitude could not have taken place unless the natural flow of economic development had been moving in the same direction. In the eighteenth and nineteenth centuries the technical superiority of maritime transport combined with the other influences then at work to place Britain in a position of economic advantage compared with the rest of the world: movement between the islands and sea-boards which comprised the British Empire, and between Britain and the great sea-ports of the world was carried out more cheaply than trans-continental movement. Both the full development of railway systems in the last quarter of the nineteenth century, and, later, the development and utilisation of the internal combustion engine, have swung the balance of advantage back in favour of the land masses, and brought the U.S.A., Germany and, later, Russia into predominant positions. But the rapidity of

development in all these cases was accelerated by state action, or, more accurately, by action through the state by interested groups.

The second force was the use of state power to develop backward areas. "Economic imperialism" is one of the most abused of terms, but it can be given a meaning which is definite, precise and fruitful, and, so defined, it can be used to point and sharpen the discussion of problems of economic development. When nationals of a country in an advanced stage of economic development invest capital in a relatively backward country, or in an undeveloped colonial area which is in the possession of that country, the result is not necessarily the exploitation of the native races. On the contrary, the natural result of the introduction of capital into such an area is to improve the standard of living by increasing the productivity of labour. If in such cases political pressure upon a weak native government, or the decrees of a colonial administration, ensure the safety of the invested capital, there is still little ground for criticism from the viewpoint of economic policy. The development of white Australasia provides an example, where, partly as a result of such action in the earlier stages of development, the standard of living is now the second highest in the world.

On the other hand, monopoly interests may succeed in setting up one or two industries or types of "plantation" agriculture in such an area, and at the same time exercise pressure to prevent any other capital development taking place in the area. In such cases, to which the term "economic imperialism" may properly be employed, the standard of living of the native worker may be carefully prevented from rising above its original low level. The labour market may be kept deliberately "imperfect" by preventing further industrial development which would provide alternative jobs, and thus a pool of arti-

ficially cheap labour may be maintained and exploited.

Some of the most fundamental problems which now confront the world concern the capitalisation of the backward areas. They arise out of existing trends in the world's population. Briefly, in all the economically advanced countries of the world population is either already declining, or is about to commence to do so. On the other hand, in most of the backward countries population is growing with great speed; this is most marked in India and China. In the U.S.S.R. though the economic position had been improving very fast over the pre-war decade, population was also increasing fast.

In the backward areas it looks as if the main effect of such slight declines in the death rate, particularly among children, as the application of modern science has brought about, has been to revive the danger that population might press upon the means of subsistence so hard as to keep the standard of living of the masses down to subsistence level. This was the main bugbear of the classical economists, who saw in it a threat to all human progress. The law of varying proportions bears out their fear: if population grows so fast that land and capital are permanently scarce compared with labour, the productivity of labour must be low, and the standard of living low. In the West their fears were belied, by the rapidity with which capital accumulated and by the improvement in the techniques of production and transport which combined to lift the standard of living high enough for a generation to induce the workers to limit their families, in order to maintain it. Can the standard of the backward peoples be lifted in the same way for long enough?

This depends on the economically advanced countries, where declining population may render it increasingly hard to maintain the future marginal efficiency of capital, and thus to maintain the rate of new investment and full

employment. While population is growing, existing fields of investment multiply; when it stops, new investment and even to a certain extent the reinvestment of depreciation funds must be in *new* industries. So the chances of full employment are lessened. But if the countries where industry is well developed and population is declining can maintain and increase the stock of capital there will be more land and capital per worker, and earnings and the standard of living will rise together. There may be one loss to the countries with a fully populated area in these favoured circumstances, that of the advantage of mass production in those industries which need *very* big markets, unless international trade can get running smoothly, so that those industries can grow to their optimum size serving an international market. Thus the importance of good international relations in the future is considerable. Even more important is the part which international investment may play in solving the problem of the "runaway" populations of the backward lands. To lift their standard of living high enough and fast enough for a generation to check their present rate of growth and give them a chance of a reasonable standard of life, their productivity must be raised. This means the accumulation of capital in the form of roads, railways, irrigation, schools, agricultural machinery and industrial equipment: they have no margin above subsistence out of their own current production adequate to achieve this. But the West will have a problem of finding domestic fields of investment as population declines. If these two complementary needs can be "married" and the productive equipment which the Western propensity to save must produce and dispose of if its economy is to flourish, can be loaned or even given to the backward areas in adequate quantities then the outlook is cheerful. But this consummation needs the development of methods of owner-

ship and control of Western capital invested in backward lands which will not conflict with the aspirations of the backward races to freedom and independence, and the political problems involved are not inconsiderable.

¶ It is now possible to summarise, provisionally, the working of the machinery of international trade as far as the problem of the flow of commodity trade and the location of capital investment are concerned.

Much of the economic advance of the nineteenth century resulted not only from the freedom of trade in finished goods and foodstuffs, but also from the free flow of capital, and the migration of labour. This freedom has now been long in abeyance. The spread of monopoly and the development of economic imperialism, restricting investment in certain colonial areas to small groups in the metropolitan countries, have had the effect of restricting the entry of capital into many of the backward areas, and thus of maintaining a reservoir of cheap labour and an abnormally high rate of profit on the investments of the select few. Side by side with these restrictions, the limitation of emigration to the new countries (thus maintaining a high ratio of land to labour) has become almost general, and tariff systems have developed, designed to increase the rate of growth of capital within the protected country. This may well be a desirable end in some circumstances and if the capital was properly placed and if the internal effect of competition ("perfect" competition) ensured that the benefits were spread evenly, would be of advantage to the country concerned in the long run. But the technique of tariff-making, dominated by the activities of "pressure groups", has inevitably linked up this movement with the spread of monopoly. The conditions of maximising the world's productive power by international trade are easily defined, once the technique of marginal analysis has been mastered, but this is not the immediate

concern of any national state, and the easy formula of enlarging the free trade area of the world by the progressive abolition of tariffs is far from adequate.

¶ So FAR, WITH one proper and unavoidable digression when discussing the capitalisation of backward areas, the question of international trade has been considered without relation to its effect upon the level of economic activity and employment. From Chapter III it is clear that this level is always precariously poised, and the activities of importing and exporting manifestly have a great effect upon it. The effect of production for export upon the internal economic situation is indistinguishable from that of producing capital goods. Entrepreneurs pay out incomes to workers and the owners of productive resources, they anticipate their own expected income by expenditure, and so swell the total of available purchasing power. But they do not release upon the *home* market any goods upon which income can be spent. Consequently the whole income generated by the export trade constitutes a net addition to purchasing power, which has the same effect in offsetting saving and the accumulation of depreciation funds as does the production of capital goods.

The purchase of imported products, on the other hand, with the exception of the profits of the merchants and the incomes of the distributive workers who handle them, siphons purchasing power out of the home market. From the viewpoint of the theory of employment the result is exactly like that of saving: incomes earned or anticipated are not available for the purchase of goods produced in expectation of sale in the home market, and to the extent that the amount is not offset by investment or by incomes generated in the export trades, the expectations of entrepreneurs are not realised. If the two forces of expansion and contraction set on foot by exports and imports respectively exactly cancel out, then it is the effect of

investment and the contemporary propensity to consume which determines the level of employment and of general economic activity. If either predominates then employment will be so much higher or lower.

Therefore the basic proposition of the theory of employment must be re-written: savings plus imports must always equal investment plus exports. The reasoning behind the extension of the formula is the same as that supporting its contracted form. Income is derived from economic activity, and both saving and the purchase of imported goods can only be financed out of income. Saving is *not* economic activity but the reverse: the purchase of imports is not economic activity *at home*. It can only, therefore, be carried out to the extent that economic activity at home exceeds that embodied in the production of consumers' goods and services for the home market, i.e., to the extent that it is offset by the production of capital goods for the home market and goods of all kinds for export. A country can save more than it invests *at home* if it is enjoying an export surplus. In this case it is in fact investing abroad. It can invest more than it saves at home if it is running an import surplus. This is the position of a country which is allowing its previous foreign investments to run down in order to expand its domestic stock of capital, or of a country in which foreign capitalists are making investments.

The position can be put in another way. A country can run a surplus of imports over exports, allowing on each side for "invisible" items like receipts and payments for shipping services and for the use of banking and insurance institutions, all the time that it can finance it, either by borrowing or by the loss of gold reserves, or by the sale of foreign assets. In the absence of exchange controls and such devices as import licences, imports and exports are made as the results of innumerable decisions

taken privately by businessmen. If at the same time that the total value of the sum of independent decisions to import is in excess of the total value of the sum of independent decisions to export, businessmen owning foreign investments decide to sell them, equally independently, to an amount equal to the difference, the surplus will be financed by these sales. Such a position involves far too much coincidence to be probable. The actual financing of any import surplus so accidentally arrived at, therefore, will have to be met either by the export of gold reserves from the country's central bank, or by the sale of its currency abroad. This will set on foot equilibrating tendencies in the monetary field, which will be dealt with in the next section. The excess of imports whether or not it is greater than the contemporary sales of foreign investments or repatriation of holdings in foreign banks, will set at work other forces beside the monetary ones, acting not only on prices but on the level of economic activity within the country. There will be a fall in the net purchasing power available, because of the excess of income spent upon imported goods over income earned by producing exports. The expectations of entrepreneurs will be dissatisfied, and they will lessen the volume of production and thus of income. As the national income declines imports will fall off: the lessened scale of industrial activity will demand less imported raw materials, the unemployed will be able to buy less foreign food. The decline will continue until the national income is that at which what the country will try to save and to import equals the current total of investment and exports.

The problem confronting a country in such a situation is therefore not that of getting rid of the import surplus, as an end in itself. It will automatically "right" itself, partly by monetary means, but for the most part by a rise in unemployment. All the time that the exports of the

country do not rise, any attempt to cure the unemployment created by the import surplus will have to be concentrated upon producing at home either the goods which were previously imported, or effective substitutes for them. In such circumstances to stimulate employment merely by an increase in investment would be fruitless, because the rise in incomes would soon be stopped by the flow of income abroad as the re-employed started to buy imported goods. An increase in tariffs therefore, designed to encourage home production of goods previously imported, is not without attraction in such a case. It carries with it however the corollary that the advantages previously derived from cheaper foreign production would be lost, and that the rise in employment might well be accompanied by a fall in the standard of living. What is really needed in such a case is a recovery of the export trade. The most appropriate policy in such a case depends on the reason why the decline in exports took place in the beginning. If the country in question had been losing exports as the result of falling behind in the adoption of new inventions, so that more progressive countries had been underselling it in the world market, the long range solution is to re-equip the export industries, and the short-term one may well be to accept lower wages and profits. This can either take place as a result of a general reduction in wage rates, reflected in lower export prices, or by a devaluation of the currency. This would make the goods of the country concerned cheaper to its foreign customers in terms of their own currency, while it lowered real incomes internally by raising prices.

But this is not the only reason why a country may develop an import surplus. Assume that in a time of general prosperity, in which all the countries of the world economy were sharing through their close association in trade, one country developed a trade depression. Within

that country incomes in general would fall, with the single exception of the export trade, whose market in countries as yet untouched by adversity would continue to be as before. As income fell in the depressed country, its capacity to import would decline. It would thus develop a favourable balance of trade, which for the time being would offset somewhat the internal decline in investment. But to the extent to which the balance of that country had become favourable, those of some or all the countries with which it entered into trade must have become adverse. Soon, therefore, they too would commence to experience depression. The first country would have in effect exported some of the unemployment which the depressed condition of the home market would otherwise have generated. But it too would lose its export surplus, as incomes in other countries contracted and depression became universal. It is in this way that depression is contagious between a group of inter-trading countries. If depression is general, then the countries where it is least serious will tend, in the short period before complete depression overtakes them, to have import surpluses. Now if it is for *this* reason that a country has an import surplus, the only sensible and effective remedy is to persuade other nations to take steps, by means of public works or other measures, to combat the internal forces making for unemployment. In that way all can expand together in harmony: to cut export prices or devalue the currency in such conditions is only to enter into competition in the export of unemployment. It follows from this analysis that any really effective measure to combat trade depression must command the support of at least a dominant majority of the nations linked together by trade.

The argument of this section may now be summarised. An adverse balance of trade—an excess of imports over exports, either paid for by exporting gold or by liquidating

foreign investments—is equivalent to an increase in the propensity to save, or to a fall in home investment of a similar value. Insofar as income is spent on imports which are not balanced by exports, income *earned* in Britain is not *spent* in Britain. The reverse, a positive balance, is the equivalent of an increase in investment or a fall in saving: money is spent and incomes are created in the production of an excess of goods for export: these incomes create a demand for consumers' goods in excess of the incomes earned in making consumers' goods, and thus offset saving in the same way as home investment. Thus in times of depression it is to the immediate interest of every country to "export its unemployment" by developing a surplus of exports. This "exports" unemployment because the country which develops the corresponding import surplus suffers from unemployment. Exporting unemployment may be a short-sighted policy because of the retaliation which it brings about. On the other hand, however, it is equally unwise for any country to allow others to export their unemployment to it. If a country develops an import surplus the position will in time "right" itself if nothing is done: the national income will fall until what people want to "save", i.e., to refrain from spending on home-produced consumers' goods, is equal to current investment minus the import surplus. In other words unemployment will grow until the demand for imported food and raw materials has fallen sufficiently to stop the drain of purchasing power abroad. The decline will continue until the demand of industry for raw materials and of the unemployed for imported food has fallen to this point. Thus neither the complete free trade advocated by the classical economists, nor protection by tariffs and quotas, is adequate to deal with the problem.

¶ CLOSELY LINKED WITH international trade is the question of the international exchange of currency:

one of the problems of trade across frontiers is that the seller wants to be paid in his own money and the buyer has to pay in *his* own, so that an exchange of currencies is at some point involved. The traditional method is simple. With both of the countries on the gold standard, i.e. with their currency either consisting of gold coins or exchangeable for a fixed weight of gold, the ratio of exchange was fixed within narrow limits. If the balance of trade between a country and the rest of the world was even, if imports equalled exports, then the "promises to pay" which the importers in one country made to the exporters in another would be equal in value to those which the importers in the second country made to the exporters in the first. In effect, therefore, through the "bill market" the exporters in each country would be paid by the importers in the same country, and no gold movement would result. Should the balance become uneven, gold would move, but not until "promises to pay" in the currency of the country with an export surplus had risen to a premium equal to the cost of moving gold. But, in general, the relative value of different currencies was stable, and thus international trade was encouraged, because the exporter knew what he would get for his goods in his own currency, and the importer knew what he would have to pay.

This is the advantage of the gold standard, and it suited the world before 1914, which was running pretty smoothly in an economic sense. But its disadvantage lies in the manner in which it allows depression to spread from country to country: it facilitates in an obvious manner the export of unemployment. Moreover the ease with which it allows money to be transferred from country to country renders it almost impossible for any one country to apply the interest rate policy suitable to its own internal employment situation. A low rate designed to stimulate invest-

ment at home may cause funds to flow abroad: a high rate designed to check inflation will bring funds flowing in, and may thus defeat its own object. It is from the full employment angle that most criticism may be directed at the gold standard: insofar as it determines monetary policy by reference to the size of the country's stock of gold rather than to its unemployment figures, it misleads.

If countries are "off gold", i.e. if the currency of each does not exchange for a legally fixed weight of gold, then the relative value of their currencies is determined by supply and demand. Thus if a country has an import surplus, and owes more abroad at the current rate of exchange than is owed to it, the value of its currency measured in that of those of other nations will fall. The supply of claims to that nation's currency, made by those who have exported to it, will exceed the demand for that nation's currency by those who have to make payments to its nationals. The prices of its exports will fall in foreign currencies, and thus the balance of trade will tend to be redressed. But for one factor, the natural result would be that currencies would exchange in the ratio of their purchasing power in the world market. Speculation, however, enters in, and distorts these natural and healthy movements. If a speculator sees that his country is developing an adverse balance, he knows that its currency will depreciate and that if he turns his money into foreign currency before depreciation and turns it back afterwards he will make a profit. So he also, like the importers, sells his own currency and buys foreign money, thus accentuating the movement started by the adverse balance of trade, distorting the relationship between the different currencies, and incidentally increasing his own profits. Thus it was found necessary by the major trading countries during the post-1930 period when most of them were off gold, to set up special machinery, like the British Exchange Equalisa-

tion Account, to offset, by government purchase and sale of currency, the effect of these speculative movements in the exchanges. The object was to ensure that such movements in the exchanges as took place reflected changes in the internal price levels of the countries concerned, and thus maintained exchange ratios in line with the international purchasing power of their currencies. The existence of such controls necessitated international co-operation. Thus it appears that neither the automatic gold standard, nor the automatic movement of the ratios of unbacked currencies, are appropriate for a world in which the two main problems are to maintain full employment and restore international trade.

The ideal monetary arrangements would in general terms be one in which the exchange ratios between currencies were normally stable, though it allowed of adjustments at infrequent intervals to compensate for changes in the relative rate of technical progress in different countries, and which at the same time included safeguards against at least the involuntary export of unemployment. The Bretton Woods monetary fund set up after the 1939-45 war in fact may be said formally to satisfy these conditions. The participating nations agree to maintain their currency at fixed exchange rates, and to alter them subject only to certain conditions relating to notice and the like. At the same time any country which temporarily finds itself unable to finance its normal imports (the first stage in the spread of depression from one country to another) can borrow from the fund certain supplies of the currency of the country from which it desires to import, and thus, in spite of its temporary difficulties, continues to import as usual. But such a piece of machinery could only commence to work efficiently after the original exchange ratios had been set at a level at which each participating country could balance imports

and exports, with the exception of those countries which were by agreement supporting export and import surpluses as willing lenders and borrowers respectively. In other words, like any other piece of economic machinery, it could enshrine harmony and agreement but could not create it.

¶ BASIC TO MOST of the international economic problems of the contemporary world is the fact that there is not necessarily common agreement between states in different circumstances, even when the conditions of long-term maximum economic well-being for the world as a whole have been defined. The economic development of the world has been uneven in tempo, and, while economic leadership is always changing hands, a wide difference in interest and position exists between the leaders and the rest. There are many things about which, in broad outline, agreement may be reached. All are interested in the avoidance of deep and general economic depression: all pay lip-service at least to the need for enlarging the circle of world trade. But on those questions of detail in which working agreement is embodied, and upon which alone stable policies can be built, agreement remains hard to reach, because in many cases real interests are mutually antagonistic. It seems that some kind of "policy" must guide international trade, however, if the world is to prosper, even if it is only the residue of agreement remaining after national conflicts of interest have been allowed for. There appears from the analysis of this chapter to be even less chance of the automatic emergence of an equitable and stable equilibrium from a policy of *laissez-faire* in the international than in the national field.

VI

THE ESSENTIALS OF ECONOMIC POLICY

¶ IN THE CONTEMPORARY economic organisation of the world, the state plays an important role. Historically, the power of the state has been utilised to shape the foundations of the existing order; the constant re-emergence of problems of unemployment, the unbalance of international trade, and the mitigation of poverty demand its as frequent intervention, as well as the constant maintenance of order and enforcement of civil law. The object of this chapter is to discuss state policy with regard to economic life, in order to ascertain if any objective and purely economic criteria exist by reference to which it can be judged. It may be assumed that it is to the common interest, for example, that the internal economic machinery of a country should be as efficient as possible. How can state action ensure this? This may be thought of as the problem of "planning".

Assuming the persons operating the machinery of state to be completely unbiased between the interests of conflicting economic groups within the community, is there any part for them to play in increasing the efficiency of the economy, beyond that which would result from completely unregulated competition within a framework of civil and criminal law designed to secure property from fraud and theft? To borrow a definition of efficiency; "Essentially, economic efficiency consists in creating the maximum surplus of satisfaction over effort, using both names in the widest possible sense. In the more concrete terms appropriate to an industrial mechanism this means carrying every line of production to, but not beyond, the point where an additional unit of product would not give

enough satisfaction to justify the absolutely necessary minimum effort required to make it: that is to say, limiting every type of output only when the need for it is so well satisfied that it may fairly be said that more good would be done either by making something else instead or by longer hours of leisure." If lines of state activity can be discovered which will increase the efficiency of the economy, as defined, beyond the level resulting from perfectly unregulated competition, one can call them "planning". Even in this sphere state action may be unwise: the difficulty of the task and the evils resulting from ill-conceived or clumsily executed remedies may combine to render a masterly inactivity the wisest course, but judgement must in each case be determined by the specific circumstances. Attempts at fulfilling a manifest duty, although they must be judged by their results, can be said to deserve the title of "planning". One must first examine the problem, omitting all considerations resulting from the passage of time. If it be assumed that the market for each of the commodities produced in the economy is a perfectly competitive one, so that in each industry price is equal to the marginal cost of production, a position results in which, by definition, all factors of production are employed with the maximum efficiency, because any change in the existing distribution of factors would cause a fall in the income of the displaced factors and the production of a relatively less desirable product. In these circumstances the only beneficial avenue for state activity would be found in those cases in which private and social net products diverged, i.e. in which the pricing system did not allow for the charging up to those responsible of certain publicly-born costs, as with the smoke nuisance, ribbon-building and the like. A competent planning authority might well charge up such costs to those responsible. Town planning, for example, may well be real planning unless too many

builders sit on the planning authority, or unless the determining margin of a political majority is deliberately decanted across an electoral boundary.

Completely unregulated competition, however, as was shown in Chapter IV, is not necessarily perfect competition. The experience of Western Europe and of America is that unregulated competition is far more likely to lead to a monopoloid structure in which the equivalence of marginal costs to prices is extremely rare. It is necessary here to distinguish between those monopolistic tendencies which result from spatial considerations and those which result from the artificial restriction of supply. In the former case it may well be argued that the problem is quite insoluble and, indeed, that a "solution" would be economically undesirable because the same physical objects in different places represent different economic goods. If the "monopolistic" position of the village shopkeeper is purely due to spatial considerations, the distribution of capital and labour in the retailing industry being free and unhampered, there is no scope for planning. If this is not the case, then the problem is one of artificial restriction of supply.

In all cases of the latter the sphere of planning is clearly demarcated, and the task of the planning authority is extremely difficult. That task is to ensure that prices are equal to marginal costs of production. Briefly, it can be attempted in three ways: The first is that of attempting by legal enactments to discourage the growth of individual enterprises beyond the technical optimum, and can only be effective when the technical optimum is relatively small. The classical case in this class is the anti-trust legislation of the U.S.A., and its results are not encouraging.

The second is to attempt to prevent the artificial sectionalisation of the market by means of trade marks and

"price maintenance" by methods analogous to those employed by the B.M.A. when, in pre-war days, it published the formulæ for a series of patent medicines. In general, states have fought shy of this task.

Both these methods are essentially negative, and rather far from the common usage of "planning". The third possible method is for the state to assume the ownership of non-personal factors of production and to instruct its officials to carry out production under conditions which will ensure maximum efficiency. This implies a free market both for final and for intermediate products and a volume of output determined in each case by the marginal cost of production considered in relation to the market price, and not by the maximum profit. This method has never been employed, the only government, that of the U.S.S.R., in a position to adopt such a policy over a wide field preferring to rely upon a system of rationing and forced saving.

To summarise: the catalogue of those activities of the state to which it is proposed to confine the term "planning" is complete, if the passage of time be ignored, when personal and social net products have been equated, and when the volume of production has ceased to be influenced by any considerations of monopoly profit. The foregoing definitions, dealing as they do with static conditions, are necessarily formal. Most, or all, of the contemporary usage of the term "planning" relates to the real world of passing time, with its resulting problems of changing individual tastes, changing volume and distribution of income, and changing technique of production. The reason why these changes introduce problems is that they cannot be foretold: it is not possible to anticipate changes in taste or technique, nor to foretell exactly how, for example, a change in the demand for a product will alter the incomes of those directly concerned with its production

or cause the total income, and, hence, the demand for other products, to vary. If, whenever a change takes place, it is not immediately followed by a suitable redistribution of the factors of production, or by changes in the remuneration of the factors conducive to such a redistribution, economic waste takes place. First, those activities of the state which relate to the anticipation of change must be defined, second, those which relate to the process of adaptation, in such a manner as to minimise the waste involved: to these it is proposed that the term "planning" should be restricted.

The first class may be dealt with briefly. There is no necessary reason why the state should enjoy any advantage over its citizens in anticipating changes in tastes or in technique, excepting its power to demand economic information from such as may possess it. This power gives it also a certain duty beyond mere publication: the information must be compiled in such a manner as to form an interrelated whole, employing a unified and coherent system of classification. (In this sphere the British State falls most lamentably short of perfection.) But when this task has been performed the whole duty of planning in this respect has been carried out.

The second class contains nearly all the questions around which controversy is ranged. Many, indeed a majority, of those proposals which are dignified by the title of "planning" may be dismissed forthwith, as failing to fall in with the definition. For example, attempts to force consumers to employ services or purchase goods which they no longer prefer, by means of subsidies or discriminating taxation, merely because in the past capital has been sunk in providing facilities for the production of such services and goods, are definitely wasteful. They lessen the efficiency of the economy as defined: such waste as occurred in the past when owing to (perhaps

inevitable) lack of foresight, capital was over-invested in an industry, is increased and not lessened when contemporary free factors are forced into collaboration with it. The waste took place in the past: the time to rectify it was before the mistake was made.

Where "planning" can be of service in this respect is in minimising similar miscalculations in the future. A *laissez-faire* economy is faced with the dilemma that if competition is perfect, i.e. if all producers act quite independently, each ignorant of the activities of the others, any increase in demand for a product will probably lead to the over-capitalisation of the industry, while if they are sufficiently well informed to be able to anticipate one another's reactions they will, at the very least, enjoy the monopoly profits of tacit agreement. But all that "planning" can do to remedy this has already been stated: the planning authority has performed the whole of its by no means inconsiderable duty when it has disseminated the maximum of economic information and suppressed or superseded monopolistic activities. At least, the whole of its task has been fulfilled if the inevitable, although minimised, imperfections of anticipation do not lead to unemployment among free factors i.e. labour and fluid capital.

¶ IT IS HERE that the crucial problem of planning in a dynamic state becomes apparent. The duty of the planner is to ensure that after a change in demand has taken place it should be immediately followed by a suitable redistribution of the factors of production, or by changes in the remuneration of the factors conducive to such a redistribution. Now in a pure *laissez-faire* economy the effect of a fall in demand for a product is that the remuneration of certain free factors falls to zero, at least, until they secure re-employment. In fact, this does not take place: the downward limit to the income of the unemployed man is set either by private benevolence

or state provision. But if it did, then quite clearly unemployment would not exist: the unemployed would either find some employment or rapidly starve to death. Death would lessen the supply of labour and recurring privation lessen its efficiency, but there would be no permanent unemployment problem.

This solution, however, would not satisfy the conditions, because it would result in a cumulative diminution in the supply of labour. The problem of planning is not to be solved by destroying part of the embarrassingly abundant factor: all the factors, including the supply of labour at its existing physical efficiency (although specialised skill must in some cases, of course, be relinquished), must be redistributed. And it does not follow that the fall from normal earnings to unemployment benefit is the change in the remuneration of labour most conducive to its effective redistribution. If a miner is stranded in a derelict Welsh valley on an income carefully calculated to provide the minimum necessary for survival, he is not in a position to seek the employment which may await him in the Midlands or in London. Indeed, the extent to which the marginal utility of income is increased to him may cause him to discount the future so highly as to preclude him from effectively moving in search of work. It is by no means absurd to assume that a more correct change in his remuneration, directed to ensuring his rapid re-employment, would be to give him a substantial sum immediately upon unemployment in order to maximise his personal mobility and that of his family and chattels.

In this case the true task of "planning" is to maximise the mobility of labour by positive assistance rather than to rely upon the universal existence of a very high degree of inelasticity in the demand for income in terms of labour, of knowledge concerning alternative avenues of employment, and of personal mobility. It is possible to go one

step further: the higher the degree of labour mobility which it is possible to establish, the more desirable it is that wages in a declining industry should not fall. Otherwise there is some danger that labour may continue to be engaged in relatively inefficient pursuits.

This is probably about as far as one can go with delimiting the scope of internal economic planning. It will be observed that only the problem of unemployment arising out of changes in consumers' tastes and technical changes has been covered, while the much larger problem of dealing with general unemployment of the kind produced by the movement of the trade cycle or the general instability of the existing economic order has not been touched upon. The omission is deliberate: this section deals with planning which can be undertaken *impartially*, by statesmen "completely unbiased between the interests of conflicting economic groups". While every modern state *must* make up its mind about the level of economic activity and the amount of employment which it desires to maintain, it is doubtful if this can be done without favouring one economic group at the expense of others. This problem is considered in the next section. It now remains to define the term which should be substituted for "planning" in all suitable cases. "Plotting" may be said to include all attempts to divert the results of the efficiency of the economy, in the interests of groups or individuals. It is therefore the correct term to apply to all proposals aiming at artificially increasing the yield of obsolete capital goods, or at allowing or encouraging firms or specialised factors to extract monopoly revenues. Therefore, the fashion of organising the owners of obsolete equipment (obsolete in the economic, as distinct from the technical, sense) into monopolistic groups, in order to equate their earnings with those of persons exercising more desirable functions under more competitive conditions, provides us with numerous

examples. In the same way trade union activities, if they are carried beyond the point at which they merely render the labour market more perfect by counterbalancing the "monopolistic" position of employers, are clearly plotting. Indeed, a very large proportion of competitive practices in the contemporary world, human nature and the market being alike far from perfect in the majority of cases, may be described as private, in contradistinction from state, plotting. And herein lies the cause of much confusion: planning is always liable to be denounced as plotting by those whose plots planning would disrupt, while most plotting can be justified in the eyes of the public as planning, because it is counter-plotting against the plots of some other state or institution. Tariff rises against tariff, currency depreciation is countered by import quota. The trade unionist declares that the world of capital is united against his feeble efforts to establish the minimum standard of life consistent with physical efficiency, the industrialist seeking for tariff protection that he is engaged in an infant industry suffering from permanently arrested development. In the midst of all this it is at least of advantage to have one's terms clear.

In conclusion, a word on the political significance of these two terms is necessary. As employed above their connotation is strictly economic: they may be used to describe, but not to judge, political systems and policies. Thus one may say that the economy of to-day is a mixture of planning and plotting, with plotting predominating, and with most of the true planning in progress consisting of the selection of those plots which conform most closely to the necessities of planning. One may also say that most of the proposals which political parties advance in the name of planning are plots in the interests of those whose political plotting within the parties concerned has been most successful.

¶ AT FIRST SIGHT the problem of general employment policy appears to be simple. The larger the national income, the higher the level of economic activity, the more goods there will be to distribute, and the greater will be the total of economic satisfaction. There are, however, two secondary aspects of employment policy to consider. First, the higher the level of employment the stronger is the bargaining position of organised labour, and, if the economic system of a country has been working habitually with a large reserve army of labour which has depressed wages and impersonally enforced rigid labour discipline, a period of full employment may call for radical and unexpected re-adjustments. Second, all the time that the propensity to save is such that a large national income will involve so much saving that a high rate of capital investment will be necessary to offset it, a period of full employment will of necessity be a period of rapid capital accumulation and thus of cumulative change in occupations, in productive techniques and in the distribution of income. Ultimately, the result of steady and rapid capital accumulation would almost certainly be that capital would cease to be scarce; the "functionless investor" would cease to draw an income from industry, and the rate of interest would fall to zero. Both these two results of long-continued "full employment", although they are logically separate, tend to redistribute income in favour of the working classes. Thus the level of employment at which state policy is directed cannot be considered in isolation from political aims and social obligations.

The two questions, although they are two and not one, are so closely inter-connected that it aids realistic exposition if they are investigated jointly. The best method is probably to trace the manner in which they arise as a free enterprise economy approaches full employment. The economy concerned is deemed to possess a government

which is determined to achieve and maintain full employment, and is therefore prepared to adopt whatever policy in respect of the rate of interest or public works is necessary to achieve that end. It is also assumed that it is prepared to institute price-control as an anti-inflationary measure, but that it is reluctant to interfere further with private enterprise. Certain further assumptions are also made about the structural features of the economy. First it is assumed that the stock of capital equipment is already large, that the propensity to save rises to a high proportion of the national income in full employment, and that the proportion of the national resources normally employed in the production of capital goods is also high. Second, it is assumed that conditions of imperfect competition prevail over large sections of industry. It is indeed against such a background, that of an economic set up extremely vulnerable to general unemployment, that such a government might be expected to come to power in a democratic country. There is little doubt that the process of achieving full employment, commencing from a position in which the proportion of unemployed human and physical resources is considerable, can best be explained by the method of Chapter II, which largely derived from Lord Keynes' analysis and, hinging upon the propensity to consume, derives its dynamic from the net marginal efficiency of capital. Even when business anticipations are so gloomy that the marginal efficiency of capital is absolutely negative, i.e., would be negative if the rate of interest fell to zero, the concept retains its value. Given an adequate state investment policy in these circumstances, expanding employment without any appreciable increase in costs, almost certainly the marginal efficiency of capital would recover to such a degree that an appropriate and structurally possible interest policy could render the net marginal efficiency of capital positive. The

more nearly conditions of perfect competition are approached, the more effective the process is likely to be, because if most firms are already of optimum size most new investments would take the form of the flotations of new enterprises. In such conditions the existence of a low rate of interest would afford a clear gap between anticipated earnings and the cost of borrowed money; the whole of this gap would be available to support the net marginal efficiency of capital. Insofar as the new firms had to make use of old "equipment", including land, a fall in the rate of interest would increase purchase prices, but only to the extent that current estimates of the net contributions to production were written up at the new rate. Only if land of a suitable type grew scarce with much greater rapidity than other factors as employment expanded, or if there were serious obstacles to the production of new plant and buildings, would this tend to diminish the "gap", and this latter circumstance would relate to the pattern of expansion, and not to changes in the rate of interest.

The assumption of conditions approaching perfect competition however is excluded by hypothesis, as unlikely to exist in the circumstances. If most new investments consist of additions to the equipment of existing semi-monopolists the position is not exactly the same. Those who make the investment decisions are likely also to be the guardians of loanable funds. Insofar as they have no part in determining the rate of interest, i.e., are not also bank directors, or do not sit upon the council of the central bank, they must accept the situation with which they are confronted, and it is difficult to see how a reduction in the rate of interest, unwelcome as it may be as a reduction of income, can have any effect other than to stimulate real investment. To the extent to which competition is imperfect the rate at which the marginal efficiency of capital declines as investment proceeds will

be intensified, because marginal income, as has been shown in earlier chapters, always falls faster than prices, when prices are reduced, and increases less rapidly than income when the conditions of demand become stronger.

If the direction of industry and of financial institutions including the central bank are in approximately the same hands, then it is probable that the rate of interest will be determined not only with regard to the desirability of stimulating new investment, but also to the profits of financial institutions. (To anticipate a later stage in the argument, in these circumstances another factor will enter. As the expansion of employment proceeds the bargaining power of labour will improve. While a central bank so directed will be anxious to avoid heavy unemployment, it will be equally anxious to avoid full employment, because of the threat to the corpus of profit-and-interest incomes which this implies. It will desire to have enough unemployment to keep industrially organised labour weak, too little to render politically organised labour strong. But in balancing upon this tight-rope it is likely to overbalance into heavy unemployment, and thus to bring about the election of such a reforming government as is here postulated.) But all that this amounts to saying is that in such circumstances, which are not quite those which are under examination, the rate of interest will be maintained at a somewhat higher level than will absolutely maximise employment. If during a phase of emergence from heavy unemployment such conditions obtain the net marginal efficiency of capital will remain the dynamic of expansion.

During the first phase of expansion from conditions of heavy unemployment therefore, all interests will run parallel. The original public works programme will have "primed the pump" and made further investment profitable. As it proceeds in each industry the rate of return to

new investment will start to decline somewhat, as the most profitable inventions and developments are exploited first, and the more imperfect competition is the more rapid will be the decline. But the *general* expansion in purchasing power will offset this during the earlier stages of expansion. The net marginal efficiency of capital—the difference between the anticipated returns on new plant and equipment and the interest which will have to be paid or foregone on the money tied up, will provide the motive power. This may well take the economy from the frigid atmosphere of 20% unemployment to the more general climate of 10%. What will happen as full employment is approached?

¶ “FULL EMPLOYMENT” MUST at this stage be defined. If the labour force of the country were completely homogeneous, all equally skilful, equally industrious, and completely adaptable, so that they could be perfectly efficient clerks one day and equally efficient miners or waiters on the following day, and if the labour market was so perfect that it did not matter where a job cropped up so long as there was a man out of work anywhere, the task would be simple. There would be no increases in the costs of production until the last man had got a job: if, thereafter, any further movement of the forces of expansion took place, inflation would automatically follow, unless gross profits fell as wages rose. But this is not likely to be the state of the labour market. Different skills and technique take time to acquire, and it is quite impossible in a society like the one under consideration for skill to be distributed in exactly the pattern which full employment would demand. It is a dynamic society, which can only achieve full employment if it is adding to its capital equipment, substituting new machines for old and mechanising processes previously performed by hand labour. Thus, inevitably, the new jobs will

demand new skills and will render many of the old ones superfluous. This must not be over-emphasised: certain industries like steel smelting and coal-mining are essential to all industrial expansion (though they, too, may well be undergoing internal re-equipment in such a period), and the more industry becomes mechanised, the less the individual skill needed in many occupations, and thus the more adaptable labour in general tends to become. A fairly large proportion of the labour force at any time also consists of learners. But, given all this, as the average level of unemployment over the whole country shrinks below about 10%, inevitably it will remain at 20% or more in some trades and fall to zero in others. In the latter group of trades the unions will be conscious of the increased strength of their bargaining position: if profits are running high some employers at least will probably be willing to pay more. Wages will therefore rise in the relatively under-manned industries. In so far as this helps to stimulate the movement of labour to the places where it is wanted it is a good thing. But increased wages mean increased costs and thus, in the "sellers' market" of a period of expanding employment, to rising prices. Moreover there is a traditional relationship between the wage rates in different trades which has a very strong influence on wage bargaining. It tends to be a rational tradition, reflecting the similarity of the skill and effort required as between some trades, and reflects the differences in comfort, safety, and expense of training as between others. So the unions in other trades will press for parallel advances. Their claim will have two bases. Prices will have risen in those industries where wages were increased first. Where these industries were producing capital goods the rise in cost need not, at least for a time, cause any difficulty, or slow down the rate of investment. The inducement to invest is the difference between estimated

future profits on the equipment of which the installation is contemplated, and the cost of paying or foregoing interest on the money thus tied up. If the price of capital equipment goes up, it can always be compensated for by a fall in the rate of interest, leaving the net marginal efficiency of capital unaltered. If, however, the rise in wages and the following rise in prices took place in the consumers' goods industries, then the rise in the cost of living would be immediate and inevitable.

The unions in the trades where unemployment may still to some extent persist, will therefore have two points on which to press for wage increases; the traditional relationship between the various industries' wages, and the rising cost of living. If on these grounds wages in general are allowed to rise, the rise will be reflected in prices, giving rise in time to further wage claims: the process will be cumulative and the position inflationary. As the percentage of unemployed reaches a low level other forces too will increase the upward pressure upon costs and prices. All the labour trained in any specific trade is not of equal skill, nor equally conscientious, nor equally strong. During periods of low employment the most productive will alone keep their jobs: as employment improves beyond a certain point in any trade the less efficient and able will finally be drafted back into employment. Their output, at current wage rates, will tend to be lower; therefore costs per unit of output will tend to rise. It is possible, too, that when the queue at the labour exchange is long the intensity of labour is high, and it is sometimes stated that with greater security of employment there is a tendency for industrial workers to lessen their efforts. (As against this there is the tendency for organised labour to try and make jobs "last" when other work is hard to come by.) In general, therefore, it can be said quite confidentially that in an economic system of the kind

under discussion, labour costs will tend to rise all round while there is still a fair proportion of men out of work. What then is "full employment"? Is it all the employment which can take place without *any* increase in wages? (Except where simultaneous increases in output per man-hour have taken place.) This might well mean, with no price controls and free trade unions, setting the target as low as a minimum of 10% unemployed. This seems to be what central bank policy usually aims at in a free enterprise society where the direction is the task of members of the business community. But it is not by any means what the man in the street (who in the majority of cases depends on wages for a living) means by full employment, nor is it likely to be the definition in a government elected by such people on a mandate to "deal with unemployment". Is there a neutral, scientific definition of full employment? The only one which the economist can produce is the purely formal one derived from general equilibrium theory, involving the assumption of perfect competition and a perfect labour market. In these circumstances, it will be remembered, the value of the marginal product of labour was equal to the wage rate, and equal in all trades, when "net advantages" had been given due weight. But it is the absence of perfect competition and the perfect labour market which creates the problem. Probably all that can be said is that the line dividing full employment from inflation can hardly be said to have been crossed all the time that increases in real wages are evening up differences in wage rates which would not have occurred in a perfect labour market, absorbing monopoly profits, and not exceeding the increase in the marginal productivity of labour which is the corollary of the declining marginal productivity of capital which new investment has brought about.

¶ It is at this stage necessary to return and

examine the forces determining wages in a period of general unemployment, such as has been assumed to have proceeded the expansion of which we are tracing the steps. With a low total of purchasing power in circulation, and a large surplus of labour in the market, money wages will have been low, but it is a mistake to assume that in all cases real wages will also have been low. Often in times of intense depression the real wages of those fortunate enough to remain in work will have been fairly high, sometimes higher than in times of general prosperity. The reason is that prices can fall faster than wages as a rule, and that attempts to cut wages further in times of depression may send prices racing down yet faster. But the incidence of unemployment in depression is very uneven, and the burden is likely to be concentrated on some trades only. Thus the most striking effect of depression on the labour market is that it makes wages more uneven between trades, and, in that people will then be very reluctant to quit even the most unsatisfactory jobs, it tends to make the labour market in general very imperfect. Thus when commencing the climb out of depression not only would one normally expect the distribution of labour, for the reasons stated above, to be different from that which full employment would demand, but also one would expect to find wages very unequal as between jobs equally arduous and salutary. Thus much of the trade union pressure which would be exerted as soon as bargaining power improves will be directed towards bringing about a greater equality of wages for jobs of equal skill and pleasantness. To this extent, therefore, their efforts will be directed to making the labour market more perfect, which can be logically justified. If wages in some trades have been forced out of line with those in comfortable jobs by the concentrated force of unemployment, the restoration of reasonably equal conditions, and if neces-

sary an adjustment in price to correspond, is a desirable end. It is a matter of *relative* adjustment.

It will be recollected that the other ground upon which unions in general would be likely to press claims for higher wages would be increases in the cost of living. In an earlier paragraph it was shown how these might result from increases in wages as specific supplies of labour ran short. But if there is much imperfect competition in the system prices will tend to increase as demand increases, whether wages go up or not. In fact before the expansion of employment has gone far enough for wages to be affected at all, the improved market conditions may increase prices. So in this case it is necessary to isolate that part of the increase in the cost of living which results from the exercise of monopoly or semi-monopoly power, and deal with it by measures of price control, before "full employment" can be said to have been reached.

A rough and ready working definition of "full employment" which is not without logical justification can now be produced. Full employment is reached when, after steps have been taken to protect the price structure from the exercise of monopoly power, any further expansion of employment would cause prices to rise.

It must be pointed out, however, that although this definition can be logically defended, it would not be universally accepted. In order to give the economic freedom to the worker associated with full employment and a relatively perfect labour market, so that he can decline to accept conditions of employment below the average, in the confident anticipation that he can find a job that will satisfy his reasonable claims, it has been necessary to deny to the businessman the right to take the highest price he can get. There is here, even before a reasonable definition of full employment can be reached, a head-on conflict of interest, a conflict of freedoms. This definition

of full employment would by some writers be defined as "over-employment" or "controlled inflation".

Suppose that full employment, as defined, has been reached, and that the only motive power necessary, after the original "pump-priming" by public works, has been the net marginal efficiency of capital. Excessive profits have been curbed by price control, but the difference between the interest rate and the anticipated rate of returns on new capital remains high enough to stimulate enough investment to offset all the saving that society will want to do under conditions of full employment. (Indeed the effect of moderate price control may be to *increase* the desire to invest, by limiting the rate of profit that can be made out of a small output.) What are the chances of it continuing?

This depends on the extent to which it will be profitable to continue to invest on a scale adequate to maintain full employment. With any given state of technical knowledge the amount of investment which can be profitably undertaken is limited. The ordinary forces of the market will see to it that the most productive are exploited first. But as investment proceeds two phenomena will show themselves. The actual physical addition to productivity from each successive investment of the product of a thousand hours (or any other quantity) of labour will become successively less as process after process is mechanised. Thus the marginal productivity of capital will fall. As it falls the marginal physical productivity of labour will rise. The average worker, better equipped, will produce more (though successively not so much more) with every addition to his equipment. From automatic lathes to automatic drills and automatic screwdrivers output per *head* will rise, while output per *unit of capital* as defined above, will fall. The rate of return on capital, set by the value of its marginal product, will fall. Finally a point

will be reached at which the *total* income of all capitalists will hardly increase, and as the process continues the *marginal* product of capital will become zero. Capital will have ceased to be scarce: no income at all will go to the investor, and the whole product of industry will pass to the *active* participants, the entrepreneurs and the workers. With existing technical knowledge nothing more can be done to increase the efficiency of production: the national income will be at an absolute maximum and will be obtained with the minimum possible of manual labour.

This state of affairs would be welcome to the worker, and to the entrepreneur (were it realistic to assume that he was not also an owner of capital). But long before it had been reached the incentive to invest would have been destroyed, if investment was undertaken for profit. The interests of the investing class do not call for an absolute maximum of total income, but for a maximum total return to the investors taken together. This point would be reached long before the marginal productivity of capital reached zero, although it would not occur until after it had started to decline. Thus in the long run the conflict of interests which first showed itself before even full employment (as defined) had been reached, would reach a climax. As soon as the point was reached at which the size of the share of the national income going to the owners of capital threatened to decline, investment would cease. But if the general social and economic institutions of a free enterprise society continued to exist, including the propensity to save, the cessation or even the slackening off of investment would bring about a general depression. A free enterprise society cannot continue to exist unless it can accumulate, and it cannot continue to accumulate indefinitely without undergoing a social transformation and abandoning profit as the motive for investment. It

therefore seems to reveal itself as a necessarily transitory phase in economic development. The greater, at any moment, the accumulation of capital, the more precarious the position.

¶ ARE THERE ANY natural forces which will resolve this dilemma? First, the preceding argument was based on one country taken alone, as it arose out of a discussion of the limits of internal economic policy. Insofar as investment opportunities exist in other parts of the world, the difficulty of maintaining full employment is very much mitigated. An export surplus has the same effect as investment at home upon employment (if it is long continued it must indeed constitute investment abroad) and the advanced countries where this problem is already a real one contains a relatively small proportion of the world's population: the rest are starved for capital, and offer a field in which, even at the existing level of technical achievement, all the surplus of the advanced countries could be absorbed without any immediate decline in the marginal efficiency of capital.

Second, technical progress is constantly providing new methods of making investment fruitful, and is as constantly destroying part of the existing stock of capital equipment by rendering it obsolete. Third, increases in population inside the advanced countries, by keeping the growth of the labour force in step with the growth of capital, could prevent a decline in its marginal efficiency. (Unfortunately, in most of these countries the population is growing less and less rapidly, and in some is threatening to decline.) These three forces all operate in the direction of making the ultimate decline of profit-seeking investment more remote. The third is of little force; the first is difficult to achieve in terms of political organisation, but offers by far the most hopeful chances. On the other hand it can only postpone the problem. The second is the least

predictable, and may continue to provide stimuli for many years to come.

Faced with a problem of growing unwillingness to invest on the part of private owners of capital, what could the hypothetical government which formed the origin of this exposition do? It could reduce the rate of interest. There are obvious limits of the extent to which this could be carried without effecting an economic and social transformation of the same magnitude as the reduction of the rate of return on capital. This would, in effect, be the recognition of this decline in another sphere, and would raise similar problems of the redistribution of income. It could, by redistributive taxation, so increase the equality of incomes that the propensity to save would fall and thus a lower level of investment could support full employment. This raises again the prospect of a transformation which the institutions of private enterprise could hardly survive. If economic life is to rely upon the pursuit of profit for its motive, a system of taxation which removes that incentive breaks the spring of the machine. Finally, the state could itself undertake responsibility for investment, owning and administering productive capital. Once more the transformation of society would be complete. Once the "natural forces" of the previous paragraph have become exhausted, it seems that either full employment must be abandoned as an objective, or the free enterprise society must be transformed into a state-directed one.

¶ THERE IS ANOTHER major economic problem which will emerge when and if the political crisis of full employment has been overcome: that is the problem of the incentive to work without the impending shadow of unemployment. If the socialist solution is the final one, its importance is intensified. With security and rising wages, will people work harder or less hard? Are we likely to have to pay the price of adopting a simpler way of life

in return for a reasonable degree of security and equality of income? The problem turns on the question of whether or not people in general will be induced to work harder by the chance of earning more, or whether they will tend to prefer more leisure as their incomes rise. One may go to the classics for two contrasting points of view. On the one hand Bernard de Mandeville in *The Fable of the Bees* (1728) says: "The only thing then that can render the labouring man industrious is a moderate quantity of money, for as too little will, according as his temper is, either dispirit or make him desperate, so too much will make him insolent and lazy." He finds confirmation from a contemporary. Sir William Petty in his *Treatise on Taxes and Contributions* argues that law and custom "should allow the labourer but just wherewithal to live, for if you allow double, then he works but half as much as he would have done and otherwise would: which is a loss to the Publick of the fruit of so much labour". But in direct opposition there is the opinion of Adam Smith in *The Wealth of Nations*. "The liberal reward of labour as it encourages the propagation so it increased the industry of the common people. The wages of labour are the encouragement of industry, which, like any other human quality improves in proportion with the encouragement it receives. A plentiful subsistence increases the bodily strength of the labourer . . . Where wages are high we shall always find the workmen more active, diligent and expeditious than when they are low."

The point here is that either may be right at the appropriate level of income relative to accepted standards: either pattern of conduct may be possible and the economist cannot rule out either as incompatible with rational conduct and thus improbable in the mass. But the one which appears dominant in a world of full employment will characterise very strongly the whole economic set-

up—simple, frugal and leisurely or complicated, exciting and strenuous. Under the shadow of unemployment one did not know what the masses would have chosen had they been free to choose, because steady or intermittent hard work was chosen for them. The essence of full employment, with a perfectly free labour market, is that they will be able to choose. One may be justified in some distrust of those who, committed to the concept of national power, or as illogically devoted to placing an unreflecting emphasis on maximising physical productivity, see the future of a free society in terms of unrelaxing effort on the part not only of those in exciting jobs like thinking, but of those in the dull jobs also.

¶ TAXATION IS ONE of the handmaidens of economic policy; a means rather than an end. Logically, the tax system of a country should be considered jointly with the system of government expenditure which results. The reasons are obvious: there are three main angles from which problems of taxation may be approached; that of administrative convenience, that of equity, and that of the effect upon production. The two latter, which are the most important, cannot be considered to any profit without also considering the economic effects of state expenditure.

Little need be said of the administrative problem. In general terms a tax should be cheap to collect, so that as much as possible of the revenue is net. It should be easy for the tax-payer to see if his assessment is correct. It should provide a steady revenue.

From the angle of equity the theory of diminishing marginal utility applied to income provides the key. As income grows, its marginal utility falls. Thus a cut of 20% in the income of man when his income is large will cause him less distress than one of 5% when his income is small. Now, as was pointed out before, comparisons

between the utility of income to different persons cannot, in strict logic be made: utility is not a "quantity" but a relationship. There is no way of *proving* that a cut of 20% in the income of *one man* who is rich hurts him less than one of 5% hurts *another man* who is poor. But, equally, there is no way of *proving* their capacity for enjoyment is is not equal. So one is entitled to fall back on common-sense, and the normal assumption of a democratic society that their capacity is similar. From this it follows that one simple rule determines the equity of a taxation-and-expenditure system. The more it tends to equalise incomes, the more equitable it is. This is the basis for steeply graded income and surtax on the one hand, and for such measures as food subsidies, family allowances, and free education on the other.

The problems of the effects of taxation on production are the most difficult. An income-tax, particularly if it includes manual workers, may discourage production, although it need not do so. Its effect upon the efforts of individuals depends upon the elasticity of demand for income in terms of effort. Income-tax lessens the return in income per unit of effort. This may, in some cases, lead to the taxed person working harder to maintain his income. Alternatively, particularly in the case of unmarried workers in trades where conditions of labour are unpleasant, he may decide that the previous input of work at lower net terms is not worth while, and reduce his output. There is no way, apart from observation, of ascertaining which will be the effects in any particular case. Both types of conduct are equally logical. Turning from the individual effects to the probable results of a steeply graduated income-tax on employment, the effects are two-fold. Insofar as it tends to equalise net incomes, thus lessening the larger incomes, out of which the bulk of saving comes, it lessens the propensity to save and thus

makes the achievement of full employment easier. But it also tends to lessen the net marginal efficiency of capital, and thus to discourage investment. (The main argument for a graduated income-tax, which is overwhelming, is its justice. The main argument against it is the administrative effort involved in collecting it, and the waste of labour involved in the conflicting efforts of the accountants employed by the business world and the revenue authorities respectively, which, from the point of view of the national effort, cancel out.) Government expenditure, rather than taxation, is of importance with regard to employment problems.

The effect of taxes on commodities can be worked out by applying the same technique used in explaining the pricing system. If goods are taxed which are produced under conditions of decreasing returns, i.e., employing some specially scarce factor of production in a higher proportion than other industries, then the output of that good will not be so much discouraged as would otherwise be the case, and the price will not rise by quite the whole extent of the tax, because, as the effect of the tax decreases consumption, costs of production will fall. Conversely, if conditions of increasing returns exist, i.e., if the industry uses some indivisible factor of production like a large plant which the conditions of demand before tax do not fully utilise, the tax will increase prices by more than its own amount, and will thus discourage production more.

Taxes on commodities in general prevent the pattern of production from conforming exactly to consumer preferences by inserting the tax between what the consumer pays and what the producer earns. This may be justified on social grounds, as in the taxes on alcoholic beverages. If incomes are approximately equal, and the taxes are spread over most consumers' goods so that indirect taxes do not unfairly penalise the poor, they do

not trespass against equity, and have the virtue of being the easiest of all to collect. Most of the tax revenue of the U.S.S.R. is derived from this source.

In general, the economics of taxation consist of the application of ordinary economic principles to the specific problems under consideration. It is one of the fields in which the technique of partial analysis finds fruitful employment.

¶ IN CONCLUSION, IT must be emphasised that judgements about economic policy cannot be made in isolation from political and ethical ones: all that can be done is to isolate and define the economic arguments as clearly and objectively as possible before blending them in the final synthesis. The aim of this work has been to explain the methods by means of which economists attempt to simplify the complex reality of that aspect of human life which is their concern, so that it may be grasped by the mind with a minimum of distortion. Economics, like all sciences, is in a constant state of development, moving from one method to another as the new one seems to be more useful. Thus the judgement of the writer, as well as his knowledge, has to be at the reader's disposal. There is little absolute and final about the treatment of economic problems in this book. Its aim will have been achieved if it assists its readers to form balanced opinions for themselves on these matters, and none the less if their conclusions should prove to be fruitfully critical of the author's premises.

APPENDIX

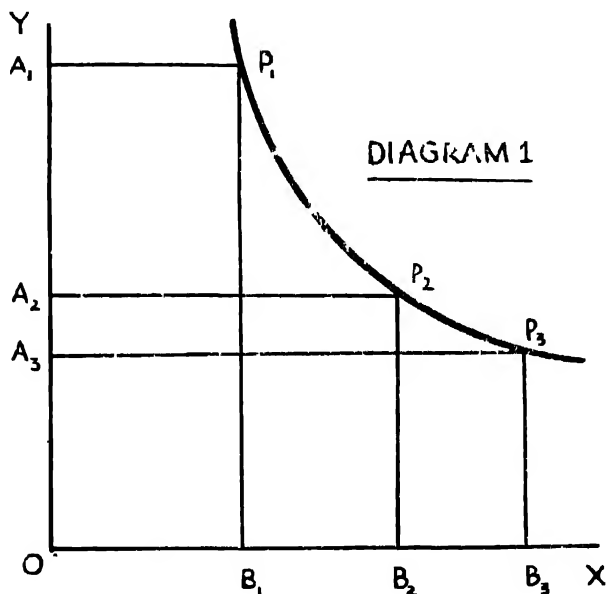
I. The Use of Geometry in Economics

As any science gains sufficient grasp over its subject matter to be able adequately to define the forces with which it deals and thus to think of them as quantities, the use of mathematics becomes both possible and profitable. There is little to be gained by putting into mathematics ideas which can equally well be expressed in words. Some ideas, however, can be expressed so much more pointedly by the use of the symbols of mathematics that the labour is justified. Moreover, this form of expression has the advantage that the meaning of terms cannot be changed during the course of an argument, and this is of no slight advantage in a science which perforce borrows its terms from the market-place. The logic of consumers' choice, for example, gains enormously in precision when the device of indifference curves has been mastered. The same is true of the theory of competition, and particularly of the difference between perfect and imperfect competition. These two branches of economic theory are therefore here presented in a simple mathematical form. The discipline of geometry is especially suitable for expressing economic propositions: nearly all economic decisions are matters of choice which ultimately, in practice, reduce to a decision between two alternatives. This is equally true of the decisions of the consumer and of the *entrepreneur*. Therefore the two-dimensional technique of geometry is as appropriate as it is convenient to handle these questions.

II. The Method of Indifference Curves

1. If a person possesses a quantity of each of two things, books and gramophone records, honey and jam, cigarettes

and magazines, he experiences a certain degree or intensity of satisfaction, or derives a certain utility from the two taken together. If the quantity of one was reduced, the degree of satisfaction he derived from the two things would fall, but this fall in satisfaction could be compensated for by an increase in the quantity of the other. If a



man was compelled to consume 40 cigarettes a week instead of his previous 50, the reduction in satisfaction might be made good by the purchase of an additional magazine. Thus the second combination of cigarettes and magazines would yield him exactly the same degree of satisfaction as the first. A further reduction in cigarettes might be compensated for by a further increase in the quantity of magazines and newspapers available.

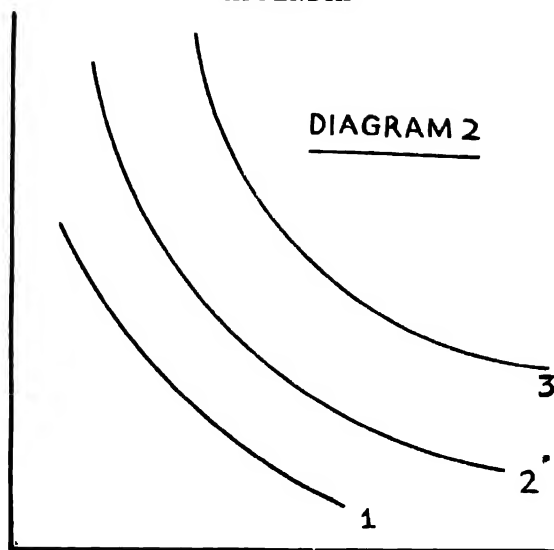
The combinations of the quantities of the two com-

modities which would give the same degree of satisfaction can be represented diagrammatically. If the two commodities are A and B, increasing quantities of A may be represented upon OY, and increasing quantities of B along OX of a pair of rectangular co-ordinates. If OA₁ and OB₁ are the quantities possessed, the combination would be represented by the point P₁. If the quantity of A fell to OA₂, the loss might be made good by the increase in B up to OB₂, so that the combination of OA₂ OB₂ represented by P₂ would give exactly the same degree of satisfaction as the first. If A and B were capable of continuous subdivision into infinitesimally small quantities there would be an infinite number of combinations which would give the same intensity of satisfaction as OA and OB. All these combinations would lie in the focus of the curve passing through P₁ P₂ P₃.

If any combination represented by a point in this curve would give the same intensity of satisfaction to the consumer in respect of whose tastes the curve is drawn, he would have no preference for one combination rather than another. He would be *indifferent* between them. Hence the curve is termed an **INDIFFERENCE CURVE**.

2. Map of Indifference Curves

But a greater quantity of cigarettes and magazines would, up to a point, give a greater degree of satisfaction from the combination of the two, and a smaller would give a less. Thus, for commodities capable of continuous subdivision there can be represented a whole map of indifference curves lying one above the other, representing greater and greater degrees of satisfaction from the consumption of greater and greater quantities of both goods. The curves may be numbered to represent successively higher degrees of satisfaction. (Dia. 2.)



3. *Completing the Indifference Curve*

What has really been done is to represent in two dimensions the ground plan of a diagram in three dimensions. If it were possible to measure the satisfaction obtained from goods, the satisfaction derived from the possession of a certain combination of two things could be represented by a height vertically above the point representing that combination. Thus the indifference curve is the ground plan or the contour line of equal degrees of satisfaction represented by equal heights above the plane OX OY. We can think of this three-dimensional diagram as a "hill" of satisfaction.

If the quantity of the one good, say B, were increased beyond a certain point, the desire for it would be satiated and the total satisfaction would be reduced by further additions. Its marginal utility would be negative. When this happened the disadvantages of further increments of

B could only be compensated for by an increased quantity of A. Similarly, if A were continually increased, further increments would become a curse and not a blessing, but the curse might be mitigated by the use of more B. If both were continuously increased, there would ultimately come a point where increasing quantities of either gave decreasing degrees of satisfaction. We can represent these three possibilities by completing the contour lines of our hill. If the quantity of B is increased beyond the quantity OK (Dia. 3), total satisfaction is decreased, and in order to obtain the same amount of satisfaction as before, the quantity of A must be increased so that the indifference curve turns up to the right. Similarly, if A increases

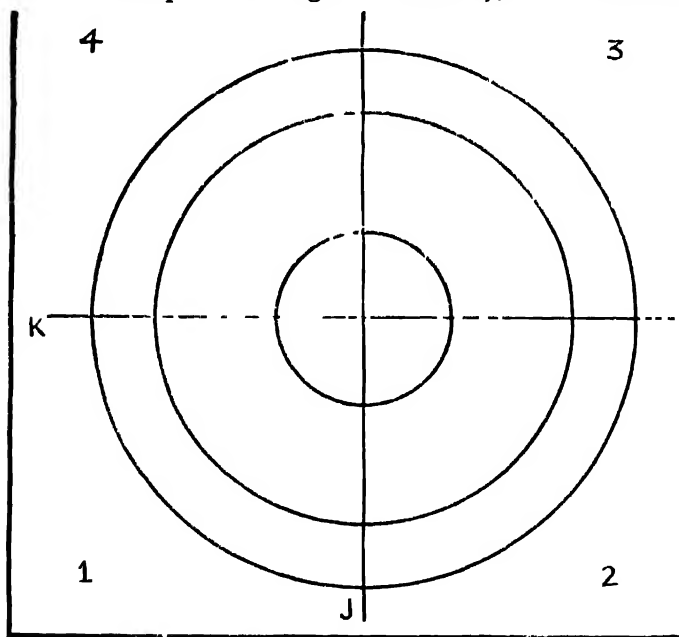


DIAGRAM 3

beyond the quantity OJ, the disadvantages of more A can only be made good by more B so that the curve turns upward to the right. But when B also reaches the point where additional quantities decrease satisfaction, the disadvantages of more A can only be compensated for by the advantage of having less B, and the curve turns downward in Section 4. The hill is completed.

The sections 2, 3 and 4 complete the picture, but they are irrelevant to the solution of problems of the administration of scarce means between the attainment of alternative ends. The only section with which we are concerned is No. 1.

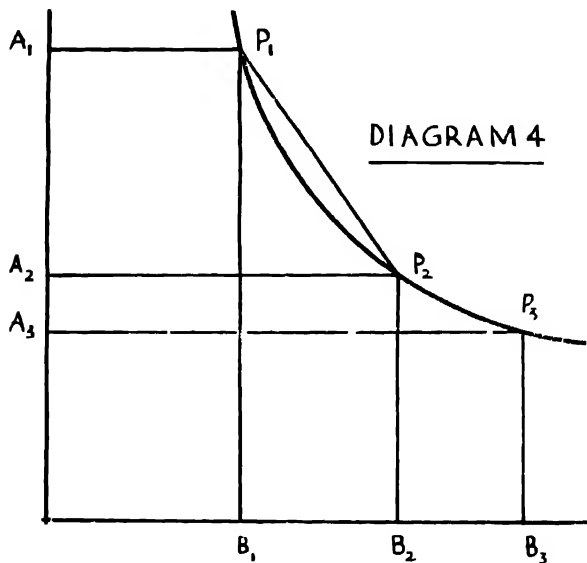
4. *The Rate of Substitution: Its Geometric Measurement*

The rate of substitution of one good B for another A is the quantity of B which must be added to make good the loss of one unit of A. That is, it is the $\frac{\text{increase in B}}{\text{decrease in A}}$ required to maintain the same degree of satisfaction. If A falls from A_1 to A_2 , B must be increased from B_1 to B_2 so that the rate at which B must be substituted for A is $\frac{B_1 B_2}{A_1 A_2}$. Conversely, the rate of substitution of A for B is $\frac{A_1 A_2}{B_1 B_2}$.

This ratio is the measure of the slope of the line $P_1 P_2$. The smaller the quantities of $A_1 A_2$ and $B_1 B_2$ the nearer the points P_1 and P_2 move to each other, until when the quantities are infinitely small they coincide.

The nearer P_1 to P_2 the more nearly does the line $P_1 P_2$ come to the tangent of the indifference curve at the point P_2 . When they do coincide it becomes a point in the tangent to the curve. Therefore when the quantities are infinitely tiny the slope of the tangent to an indifference

curve measures the rate of substitution of one good for the other just at the point of tangency to the curve. The rate of substitution at any point can be measured by the slope of the tangent to the indifference curve at that point. (Dia. 4.)

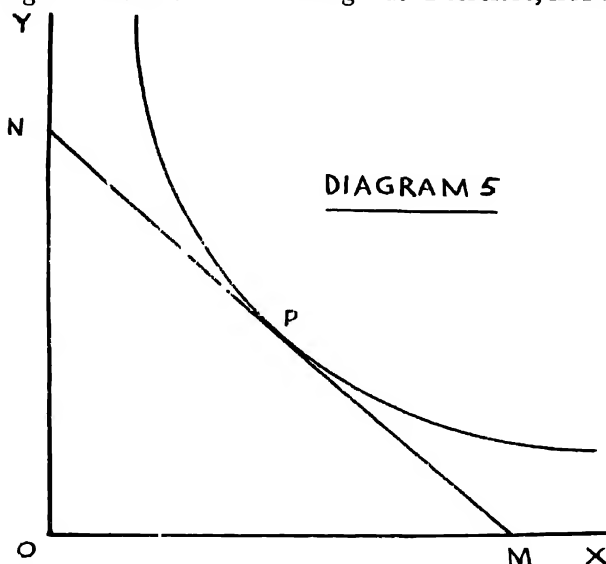


5. Indifference Curves Represent Increasing Rate of Substitution

We know from the principle of diminishing marginal satisfaction that as the quantity of a thing decreases, the loss of satisfaction from the loss of each successive unit will increase, and as the quantity of a thing increases the gain in satisfaction from each additional unit will be less. If A_1A_2 and A_2A_3 represent equal quantities of A, the amount of B which must be substituted for them respectively are B_1B_2 and B_2B_3 ; B_2B_3 will be greater than B_1B_2 , and so on. That is, the shape of the curve is convex to the origin, O.

6. The Rate of Substitution expressed in terms of Marginal Satisfaction

If the quantity of one good which is available for our use is decreased by one unit, the amount of satisfaction we lose is the marginal satisfaction. If another good is increased by one unit we gain an amount equal to the marginal satisfaction from that good. Therefore, if A were



decreased by one unit, the amount of B which must be added to compensate for the loss is the amount of satisfaction lost by the loss of one unit of A divided by the amount of satisfaction gained from the addition of one B: i.e.

the marginal rate of sub-
$$= \frac{\text{Marginal Satisfaction of A}}{\text{Marginal Satisfaction of B}}$$

But the marginal rate of substitution of B for A at the point P (dia. 5) is OM/ON, the slope of the tangent at P.

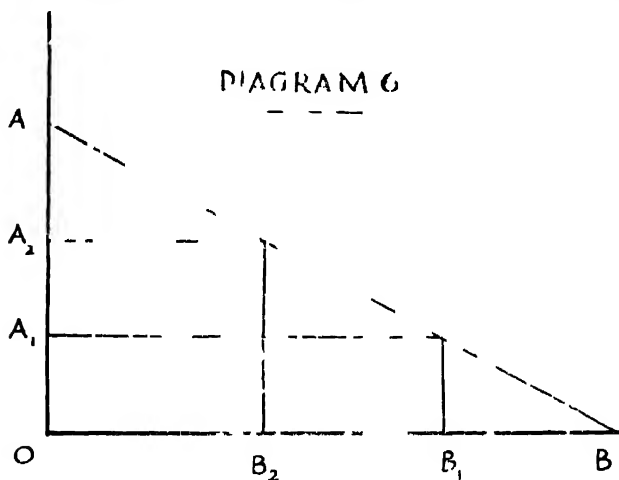
Therefore

$$\frac{OM}{ON} = \frac{\text{Marginal Satisfaction of A}}{\text{Marginal Satisfaction of B}}$$

Therefore, the slope of the tangent to an indifference curve at any point is a geometric measure of the ratio of the marginal satisfactions of the two goods at that point.

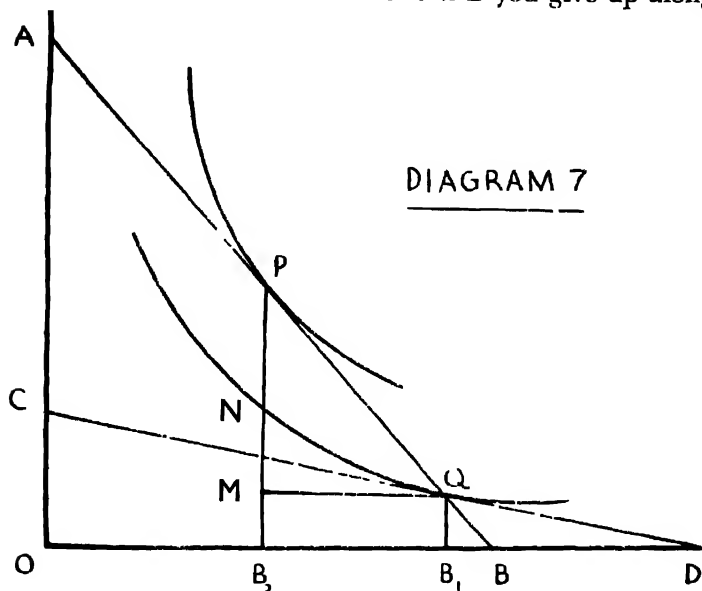
7. In Equilibrium the Ratio of Prices is Equal to the Rate of Marginal Substitution

If oranges are 12 a shilling and apples 6d. a lb the price of apples in terms of oranges is 1 lb for 6. If you



have a sum of money to spend on the two, you can express the whole of it in terms of oranges or apples. Suppose you have a sum of money to spend on A and B, and at current prices it would buy either OA of A, if it were all spent on A, or OB of B if it were all spent on B. By giving up OB you could buy OA, so that OA/OB equals the rate of exchange of B for A, and OB/OA is the rate of exchange of A for B. *The line AB represents all the alternative combina-*

tions of *A* and *B* which you can have at the current prices starting with a sum of money which would buy *OB* (Dia. 6). If you give up one unit of *B*, reducing your possible supply of *B* by *BB₁*, you would be able to buy *OA₁* of *A* and *OB₁* of *B*. By giving up 2 units of *B*, cutting your stock down to *OB₂*, you would get *OA₂* of *A*, and so on. You measure the amount of *B* you give up along



OX from the point *B* to the left. Which will be the combination you will choose? How will it be determined? Sketch the indifference curve map in on Dia. 6, as in Dia. 7.

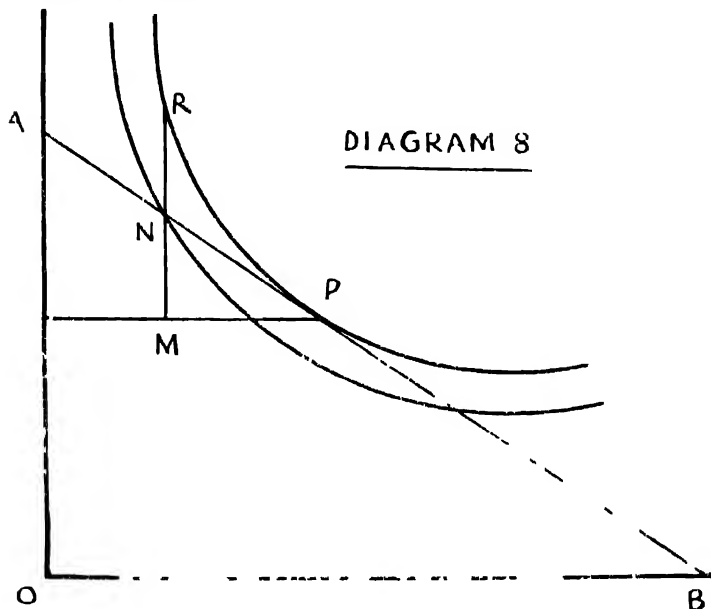
Suppose you have spent your money at random and have the combination *OB₁OA₁* represented by the point *Q*. The rate of substitution of *A* for *B* at *Q* is given by the slope of the tangent at *Q* which is *OD/OC*. Now suppose that you gave up one more unit of *B*, reducing your stock

to OB₂. The loss of B is measured by QM. The amount of A which you *need* to make up for the loss of that last unit of B is shown by the point where a line drawn vertically through M cuts the tangent CD, which is N, since the slope of CD gives the rate of substitution of A for B, but the amount you *actually get* is greater than this, it is MP. Therefore, if you have the combination represented by the point Q you get more than enough to maintain the same degree of satisfaction you had from OB, OA at Q if you exchange a unit of B for a unit of A. Thus you get enough A from exchanging one more unit of B to give you the same amount of satisfaction, plus something over. Hence, you now get more satisfaction than you had at Q. You move up to a higher indifference curve.

When you get to the point where the line representing the ratio of exchange between B and A is a tangent to an indifference curve, the rate at which you can exchange B for A is exactly the same as the rate at which you have to substitute B for A in order to maintain the same degree of satisfaction. By giving up the marginal unit of B at this point, provided the units are very small you get just sufficient A to give you just as much satisfaction as you lost by the sacrifice of the marginal unit of B. At this point you have attained the maximum degree of satisfaction possible to you at the given rate of exchange of B for A when you have total resources equal either to OB or OA to distribute between the two goods.

If you continued to give up B for A beyond the point P, the sacrifice of further units of B would result in a greater loss of satisfaction than could be replaced by the additional satisfaction obtained from the additional quantities of A received in exchange. This can be seen from Dia. 8. If at P you gave up one more unit of B equal to PM, the amount of A you would get for it would be MN. But the amount of A you would want in order to maintain the same degree

of satisfaction as that you enjoyed at P would be MR. (Draw a line vertically through M to cut AB in N and the indifference curve in which P lies, in R.) Therefore, further exchanges would force you to move downward to a lower indifference curve.



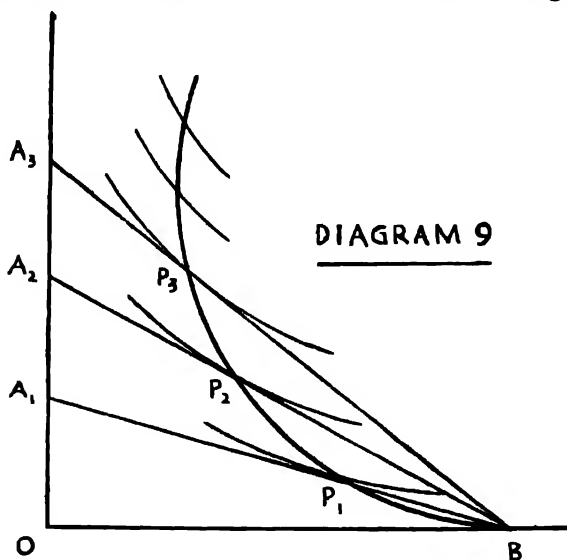
Therefore we can see that the maximum degree of satisfaction possible is attained when the ratio $\frac{\text{marginal significance of B}}{\text{marginal significance of A}}$ which is the number of A you need to replace B, and is represented by the slope of the tangent to an indifference curve at any point, is just equal to price of B, which is the number of A you get from giving up a B, and is represented by OA.

You wish to climb as far as possible up your hill of

satisfaction. The footpath by which you must travel is the line AB, representing the rate of exchange of B for A. You reach the highest point of that path at the point where the line is a tangent to an indifference curve.

8. *The Preference Curve or Demand Curve*

AB represents one rate of exchange. The higher the price of A in terms of B, the smaller the distance OA. As the price of A in terms of B falls, OA becomes longer and



the slope of the line AB becomes greater. That is the quantity of A which you can buy with the same amount of money increases, while the quantity of B remains the same. Expressed in terms of A your income increases with a fall in the price of A: expressed in terms of B it remains the same.

Successively lower prices of A in terms of B would be represented by a series of positions of the line AB. At each

of the prices represented by different positions of the line AB the most desirable combination of the two goods is that at the point at which that line is tangential to an indifference curve. A curve as in Dia. 9 drawn through these points, $P_1 P_2 P_3$ will be the focus of points representing the most desired combination of the two goods, as the price of A continuously falls. It will represent the demand for B and A at any relative prices of the two goods. At first the marginal significance of the small quantity of A is very high relative to the marginal significance of the large quantity of B possessed, so that as the price of A falls it becomes more worthwhile to give up more B to increase the consumption of A. But in the majority of cases a point will come when the relative marginal significance of A to B has fallen so low that a further fall in the price will result in the consumption of both A and B being increased, so that less B is now spent upon A than at the higher price. So long as the quantity of B spent upon A increases as the price of A falls, the demand for A in terms of B is elastic. When the quantity of B spent upon A begins to decrease as the result of further falls in the price of A, the demand for A in terms of B has become inelastic.

The fall in the price of A increases the quantity of income in terms of A. The amount by which the expenditure of B on A will increase or decrease at any point as the result of a small fall in the price of A depends partly on the amount of that fall, and partly on the relative marginal significance of A to B at that point. The first is termed the "income effect" of the price fall, because it depends on the extent to which the total income is increased in terms of A, and the second the "substitution effect" because it depends on the ease or the difficulty with which A can be substituted for B at this point.

The method of expressing demand curves on the indifference curve diagram demonstrates clearly the way in

which changing elasticity of demand alters the quantity of one thing which will be offered for another as the price falls.

9. *Extreme Cases of Elasticity of Demand*

If the demand for one thing in terms of another is elastic, however low its price, the demand curve would approach nearer and nearer to the OY axis without ever touching it. The only case is probably the demand for money in terms of goods.

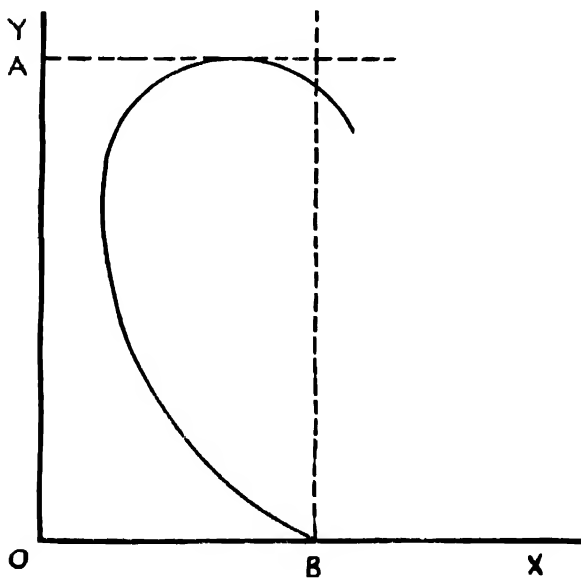
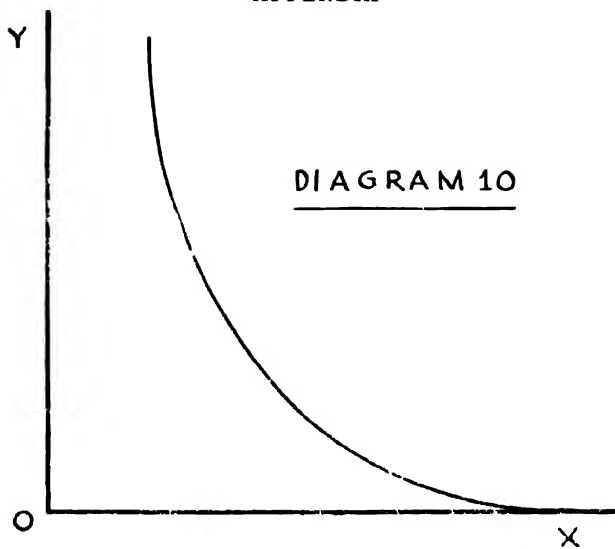
The other extreme case is that in which, as the price of A falls, the quantity of A actually consumed decreases after a point while the amount of B retained increases. This only occurs in exceptional cases where the range of things bought is very small and a very large proportion of the income is spent upon the goods whose price falls, while there is a large range of goods which might be purchased if income increased. An example is the demand for bread on the part of the very poor.

These are two exceptions to the general rule that demand is first elastic and then becomes inelastic as the price continues to fall. (Dia. 10.)

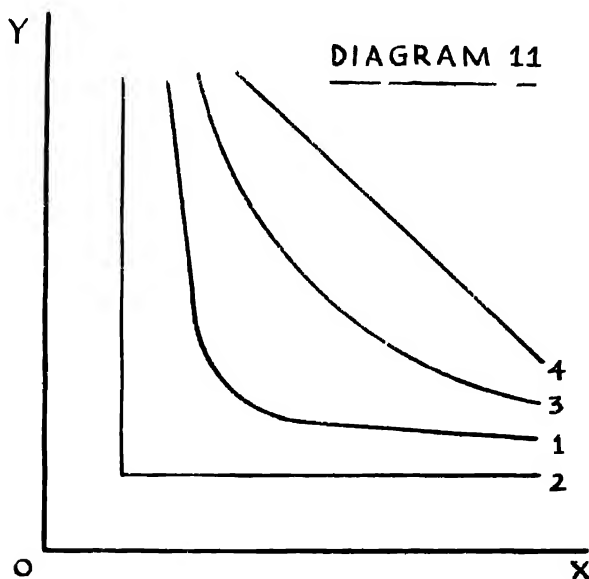
10. *Degrees of Substitution shown by Different Shapes of Indifference Curves*

(1) *Perfect Substitutes*

All goods are more or less substitutes for one another, but the ease with which one can be substituted for another differs. If a given quantity of one thing is always regarded as being just as good as a given quantity of another, no matter how much or how little is possessed, the two things are perfect substitutes. If 1 lb. of mutton chops will always give as much satisfaction as 1 lb. of steak, no more and no less, no matter how many times one or the other



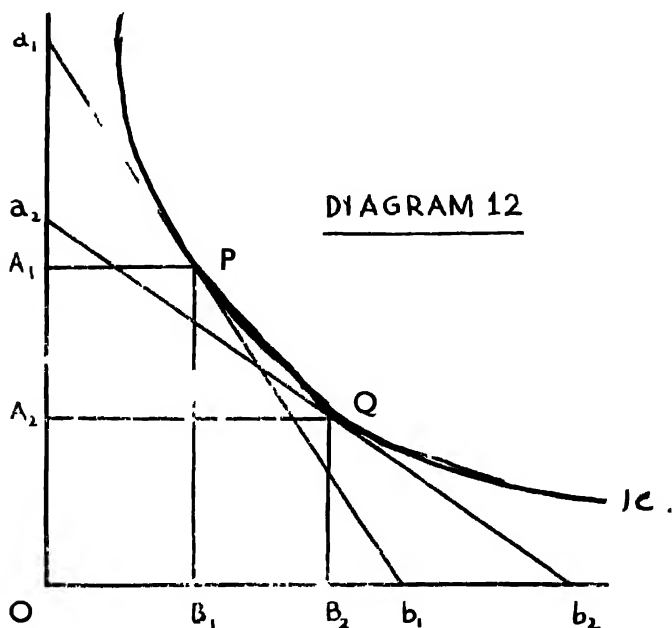
is eaten, the consumer will always be indifferent between them. The indifference curve will be a straight line for the rate of substitution will be just the same when you have a lot of B and a little A, as when you have much A and a little B. One *or* the other will be consumed according to which is cheapest. Perfect substitutes are regarded by the economist as being the same good. (Dia. 11 (4).)



(2) *Zero Substitutes*

When it is completely impossible to substitute things so that they must always be used in fixed proportions, there is a case of zero substitution. This will be represented by a pair of lines at right angles to one another. However much you increase B you cannot do with less A, and however much you increase A you cannot make up for the loss with more B. (Dia. 11 (2).)

11. *The Elasticity of Substitution* of two things is a measure of the ease with which one can be substituted for the other. If it is very difficult but not impossible to substitute one thing for another, the indifference curve will approximate to that for the case of zero substitution, two lines drawn at



right angles. If it is very easy to substitute one thing for another, the indifference curve will approximate to that for the case of perfect substitution, the straight line. Thus the ease of substitution varies from the very inelastic at one extreme to the very elastic at the other. (Dia. 11 (3) and (1).)

When the substitution of one thing for another is difficult, a very small change in the proportions of the two

goods will result in a very large change in the rate of marginal substitution between them. When substitution is easy, a small change in the proportions of the two things will not result in a very great change in the rate of marginal substitution of one for the other. Thus the relation between the change in the proportions and the consequent change in the marginal rate of substitution will give us a measure of the ease of substitution.

1. When the increase in the proportion of one good to another between two combinations on the same indifference curve is less than proportionate to the increase in the rate of marginal substitution of that good for the other, the elasticity of substitution is less than unity. It is a case of inelastic substitution.

2. When the proportion of one good to another increases between two combinations more than proportionately to the increase in the marginal rate of substitution of that good for the other, the elasticity of substitution is greater than unity. Substitution is elastic.

3. When the increase in the ratio of one good to another is exactly proportionate to the increase in the rate of marginal substitution of that good for the other, elasticity of substitution is constant.

Let P and Q (Dia. 12) be two points on an indifference curve representing the combinations $OA_1 OB_1$, and $OA_2 OB_2$ respectively of the goods A and B. Let the marginal rate of substitution of B for A at P be $\frac{Ob_1}{Oa_1}$, and at Q $\frac{Ob_2}{Oa_2}$.

The conditions of substitution of B for A are inelastic when $\frac{\text{increase in proportion of B to A}}{\text{original proportion of B to A}}$ is less than $\frac{\text{increase in marginal rate of substitution of B for A}}{\text{original marginal rate of substitution of B for A}}$,

$$\begin{array}{c}
 \frac{OB_2}{OA_2} \quad \frac{OB_1}{OA_1} \\
 \hline
 \frac{OB_1}{OA_1} \\
 \hline
 \text{that is when } \frac{\frac{OB_2}{OA_2} \quad \frac{OB_1}{OA_1}}{\frac{OB_1}{OA_1}} < 1
 \end{array}$$

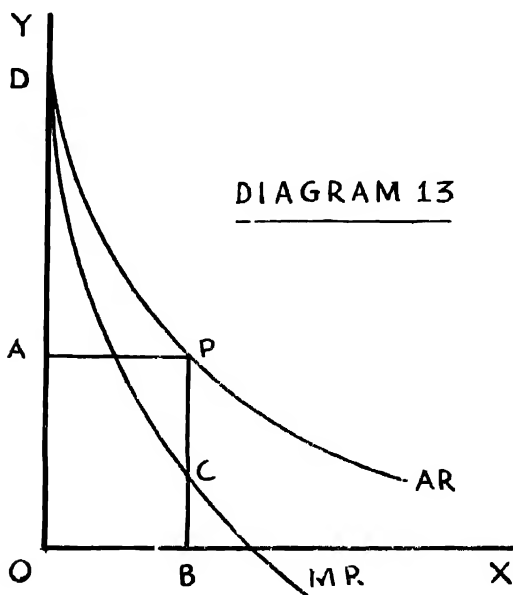
When the above fraction is greater than 1 the condition of substitution is elastic, and when it is equal to 1 the elasticity of substitution is constant.

III. *Partial Analysis*

1. In the section dealing with indifference curves the quantities dealt in are capable of precise definition, if not of measurement in the case of the individual. This section deals with the question of anticipating entrepreneurs' reactions to given, artificially limited circumstances, including the conditions of demand. The argument, given its basic assumptions, in all cases is internally consistent, but in applying the results to the real world the qualifications of the text must not be overlooked.

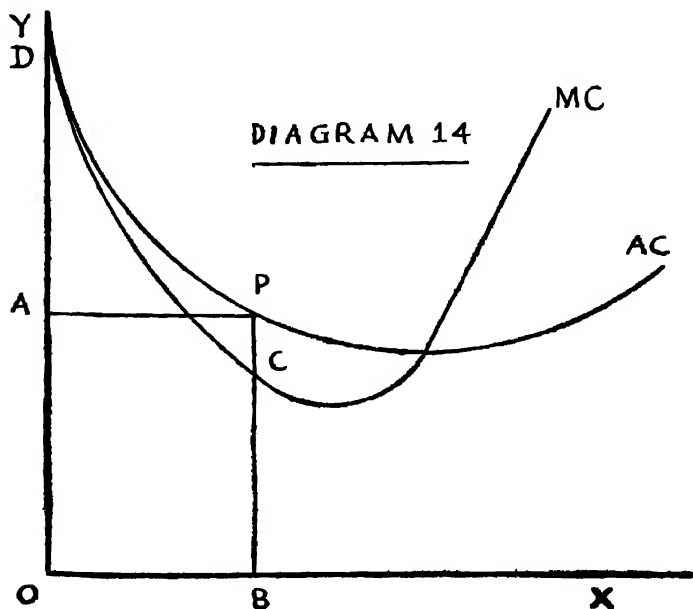
2. Normally, the conditions of demand are such that if a rectangular diagram representing units of price on the upright or Y axis and units of quantity on the horizontal or X axis be drawn, a curve representing the conditions of demand would slope downwards, thus denoting that as prices fell sales would increase and *vice versa*. Let us denote this by AR: it is the average revenue curve. From any point on it perpendiculars to OY, OX would contain an area denoting the total revenue, price multiplied by sales, obtainable at the price P. Identical conditions of demand can be denoted also by another curve MR, or the marginal revenue curve. This denotes, for each price, the net

addition to total revenue resulting from the extra sales induced by *moving to that price* from the one above it. MR must lie below AR all the time the latter is falling: the less elastic AR, the relatively greater will be the slope of MR. If AR, as is usual, becomes less elastic as the lower range of price is approached, MR will become negative past the point at which elasticity $(e)=0$. Total revenue is thus expressed either as OA PB, the result of multiplying price by q , sales, or as ODCB, the sum of the successive additions to revenue induced by each successive price down to P.



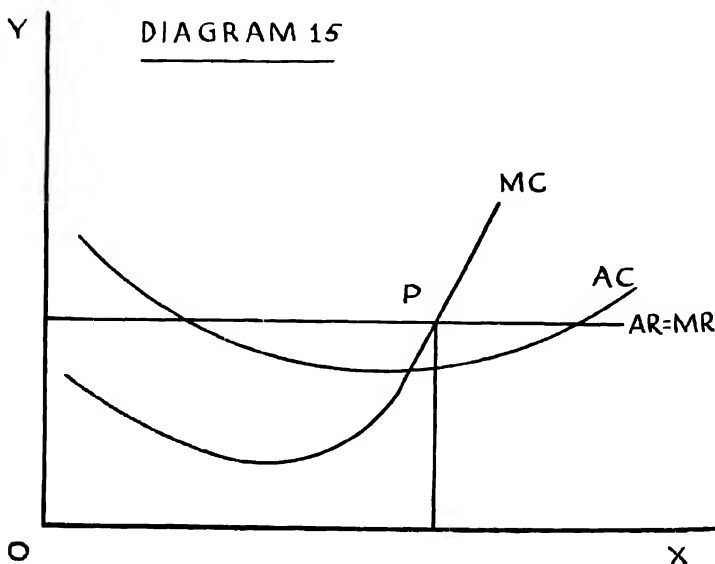
3. Given no alteration in the technique of production and no changes in capital equipment, the average costs of production, or total costs divided by the number of units of output, can be shown on a similar diagram. The curve

AC will describe the manner in which average costs, including normal profits, will fall as the output for which the plant was laid out is approached, and rise as it is surpassed. Identical conditions of cost can be denoted also by another curve, MC, or the marginal cost curve. This denotes, for each successive unit of output, the net addition to total cost of production caused by producing it *in addition* to the cost of producing the previous total of output. MC must lie below AC all the time that the latter is falling, be identical with it at the point at which it is at a minimum, lie above it all the time that it is rising. Total cost is thus expressed either as OA PB, the result of multiplying average cost by output, or as ODCB, the sum of the successive additions to cost induced by each successive unit of output up to B.



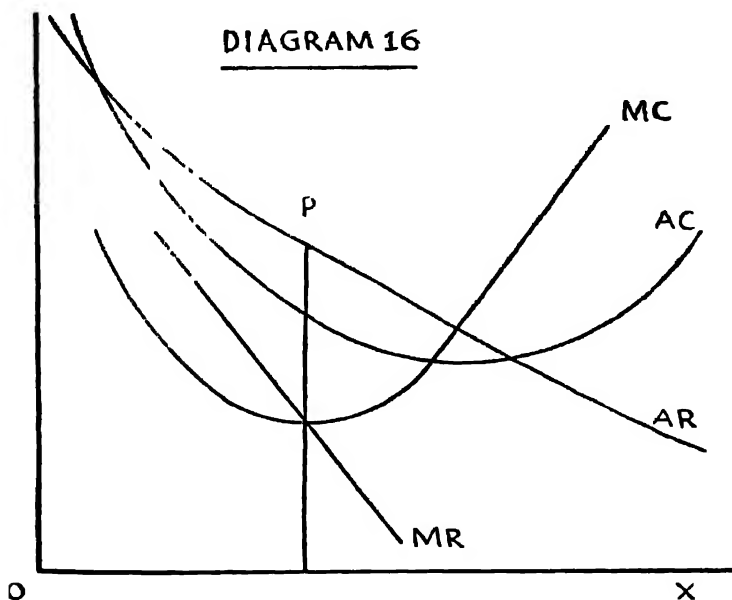
4. Given the cost and demand conditions for any firm, the conditions of maximum profit are that $MR=MC$. At this level of output and sales, while profits are at a maximum they may be positive, zero or negative according to whether at this point $AC < , = ,$ or $> AR$.

5. The fundamental condition of a perfect market is that the seller shall be confronted with a single price which he can do nothing to alter. Thus the elasticity of demand for the product of the *firm* is infinite. Therefore MR and AR merge their identity, and can be denoted by a horizontal straight line. Production will be carried up to the point where $MC = MR$, which also $= AR$. In the situation as depicted at P , $MC=MR$, so profits are at a maximum. This is the condition of short-period equilibrium. However $AR > AC$, so profits are abnormally high. Long-period equilibrium will only be reached when new firms



have entered the industry, causing AR to fall. When $AR=AC$ it can only be tangential to AC at the lowest point on AC . Thus in long-period equilibrium in a perfectly competition industry $MC=MR=AC=AR$.

6. The fundamental condition of an imperfect market is that the elasticity of demand for the product of the firm



shall be less than infinite: the producer has a choice of associated prices and outputs. Therefore $MR < AR$, and the point where $MR=MC$ must thus be below AR . In the situation as depicted at P , $MR=MC$, so profits are at a maximum. This is the position of short-period equilibrium. However $AR > AC$, so profits are abnormally high. Long-period equilibrium will only be reached when new

or old firms producing competing products have either entered the market, or increased their previous output, or reduced their prices, causing AR and its associated MR to move to the left. When $AR=AC$ it can only be tangential to AC at some point *above* the lowest point on AC. Thus in long-period equilibrium in an imperfectly competitive industry, $MC=MR < AC-AR$, but at some point higher than the lowest point on AC.

7. Thus the conditions of long-period equilibrium for a perfectly competitive market are unique and definable: only prices equal to the lowest possible costs of production are stable. The conditions of long-period equilibrium in an imperfectly competitive market however are not unique: they depend on the elasticity of the demand curves as they fall to the left as a result of competition. The only definite condition is a negative one. In an imperfect market any price which is stable *must be in excess* of the lowest possible cost of production.

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